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Railway Age

SECOND HALF OF 1918—No. 15 SIXTY-THIRD YEAR

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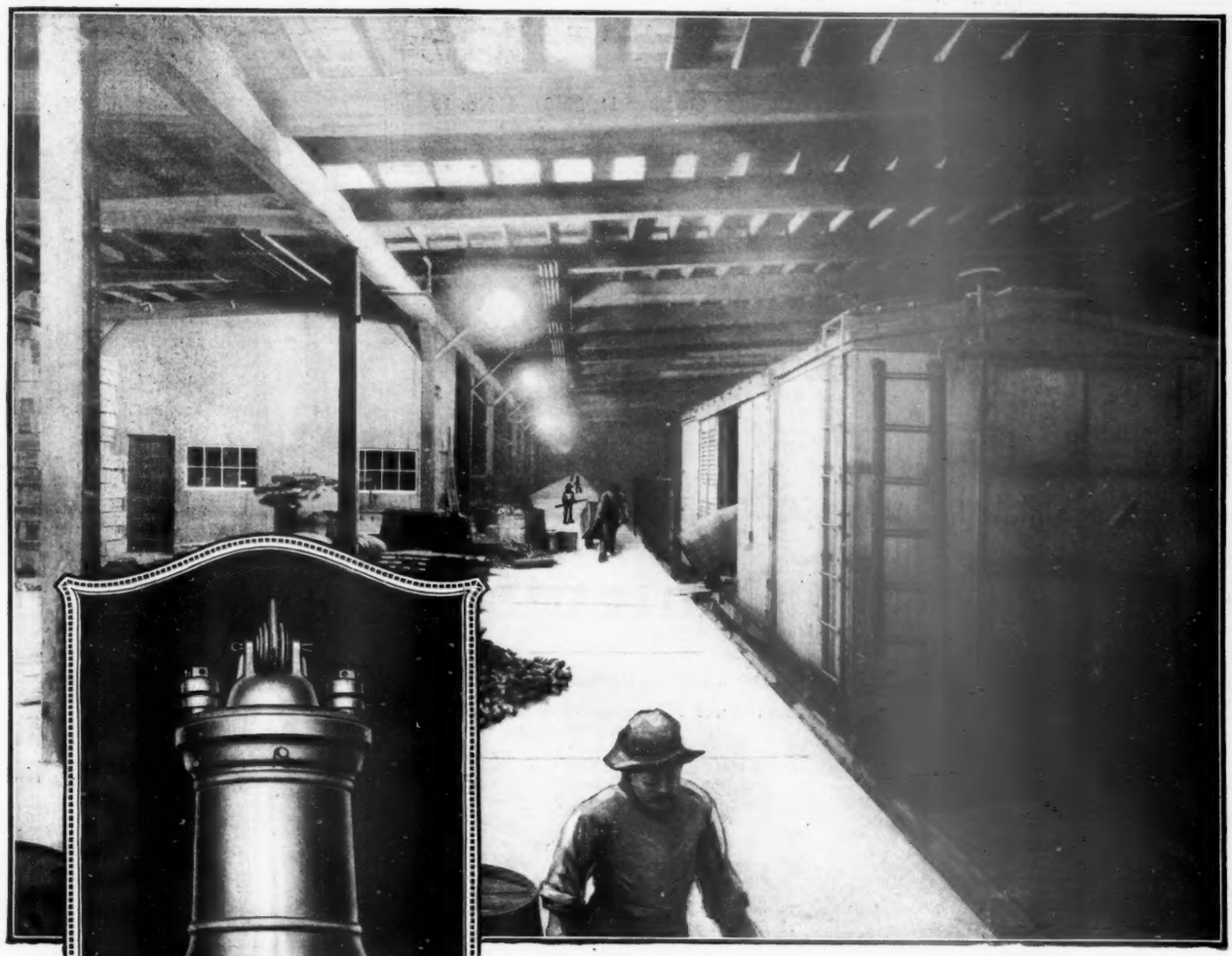

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Railway Age

Vol. 65 October 11, 1918 No. 15

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You're Letting the Kaiser Fool You

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EDITORIAL

Railway Age

The Kaiser is at his old tricks again. He began his latest stunt two or three weeks ago when he had Austria propose a meeting to consider peace terms. Having been repulsed there he has advanced to the next step in his campaign and has now had his own imperial chancellor make a request for a restoration of peace by negotiation. No longer having any reserves left in the field to parry Foch's repeated skilful blows, he has brought up his diplomatic reserves instead, and has launched in another quarter a new attack that, were it not for the Allies' past experiences with similar drives for peace, would be far more dangerous than a campaign in the field, for the reason that its objectives and its methods might be less well understood. But, in this case, the Allies have little to fear from the new peace drive. We know its objectives beforehand. We realize that what the German wants is to get away with his booty—or at least a large part of it—before he has been entirely subdued and defeated, and we know that he hopes by discussing peace to undermine the morale of our soldiers in the field and the people at home by making them think that the war is nearly over, thus leading us to relax our efforts. But this time, the German will reach neither of these objectives. The allied peoples are behind this war to the limit and they realize that there can be no let-up until the final and only conclusion. There can be no discussion of peace terms with the arch villain of the century—with an autocrat to whom treaties of peace, promises to observe neutrality, or even international law itself mean absolutely nothing—or with a tyrant who wants to stop the war now before he is entirely defeated so that his successors may arise again at some future time to trample once more over the rights and liberties of the rest of mankind. The Allies have not yet completely won the war—they are, however, on the road that leads straight to victory and to the downfall of Kaiserism and autocracy. They have but one set of peace terms to offer. However these terms may be stated or whatever their details may be they are based on a single thing—unconditional surrender.

Our Only Terms Are Restated

Lend the Way They Fight

The *Railway Age* holds no brief for the map-makers, but it would like to suggest to any of its readers who may be ready to take any stock whatever in the Kaiser's proposal for a peace by negotiation—who are beginning to think that the war is already won, or who have not yet gone their limit in Liberty Bonds that they secure a map of the western front and mark by means of colored tacks the progress of the allied armies from day to day. They will find two very interesting things, as those of us who have kept such maps for the last few weeks will testify. One is that there is an unbounding pleasure and a pleasant feeling of optimism in advancing these little tacks nearer and nearer the Franco-Belgian border day by day as Foch launches one successful attack after another. And on the other hand they will quickly realize that, however big the newspaper headlines may look, Germany itself is still many, many miles away and that the advance of the tacks towards the line between France and Belgium—and still less the line between Belgium and Germany—is exasperatingly slow. All of which will set a man thinking and he can think along but one line. Namely, that we cannot let the German out by peace by negotiation while he still holds almost all of Belgium, while he still is mining France's iron ore in the fields between Verdun and Metz and while he is still burning towns and maliciously blowing up cathedrals and other noted works of art in northern France itself. In short, the map very plainly will show that while the Allies are going strong under Foch's able direction, there is still a great ways left to go. And go it we must. Peace moves and stories of broken German morale, notwithstanding, we must go our limit pushing behind that line until it is at least over the Rhine. Every dollar spent in Liberty Bonds will help directly or indirectly in advancing these tacks out of France and Belgium. Are you putting all the effort you can behind your little part of that line? In other words—Have you gone your limit in Liberty Bonds?

It's a Long Way to Berlin

Buy Bonds to Your UTMOST

The severe epidemic of Spanish influenza which seems now to be running almost unabated throughout large sections of the country cannot receive too much attention on the part of railway operating officers. The authorities in many cities have closed the theatres and other places of amusement. Liberty Loan meetings have been called off and in many places the opening of colleges has been postponed until the attack is over. In Philadelphia, which is suffering severely from the epidemic, the saloons have been closed. In New York, the hours for opening various kinds of business have been rearranged so as to relieve the congestion on the city transit lines. The danger of contagion is most serious in crowded places. For that reason it behooves the railways to take every possible measure to the end that they may not serve in any greater degree than necessary as an agency in spreading the disease. Crowding in passenger trains should be avoided as much as possible. The presence of an influenza victim in the midst of a crowd is exceedingly serious. A car added here or there will no doubt help considerably in many cases. Insistence on open windows and ventilators is a positive necessity. Notices should be placed in the cars that any one having to sneeze or cough should do so in his handkerchief; and what is more important, instructions should be issued to the conductors and trainmen looking to the enforcement of these things. Spitting in passenger coaches is still occasionally seen and is a particular evil in smoking cars. It is not only a most obnoxious habit but under present conditions it is positively dangerous. The present signs in cars on many railroads saying that spitting is against the law are almost a joke. Such signs should explain in far more emphatic terms how obnoxious and dangerous spitting is. Trainmen should be instructed to remonstrate with those who persist in the habit. The situation is exceedingly serious and no steps should be left untaken to remedy it.

The Spanish Influenza

Buy Bonds to Your Limit.

Railway Employees in Politics

THE OFFICERS of the railway labor brotherhoods continue to protest to Director General McAdoo against his order prohibiting railway officers and employees from participating actively in politics. The heads of the brotherhoods had conferences with the director general on September 27 and October 3. According to reports, the director general refused to recede from his position, and another conference is to be held on October 15.

Railway officers and employees are now in government service. It is difficult to see why, while they are in that service, any rule very different from that applied to officers and employees in the government civil service should be applied to them. Civil Service Rule 1, Section I, provides that officers and employees of the government subject to the rules, "while retaining the right to vote as they please and to express privately their opinions on all political subjects, shall take no active part in political management or in political campaigns. . . . Petitions or other communications regarding public business addressed to the Congress or either house, or any committee or member thereof, by officers or employees in the Civil Service of the United States shall be transmitted through the heads of their respective department or offices, who shall forward them without delay, with such comments as they may deem requisite in the public interest. Officers and employees are strictly prohibited from attempting either directly or indirectly to secure legislation, or to influence pending legislation, except in the manner above described." If this rule should be applied to railway employees they would be obliged entirely to discontinue making representations directly to the state legislatures and to Congress regarding legislation which they want, and to begin making such representations solely through the officers of the Railroad Administration. It is further provided by the Federal Civil Service rules that "an employee may not publish, or be connected editorially, managerially or financially with any political newspaper, and may not write for publication any letter or article, signed or unsigned, in favor of or against any political party, candidate, faction or measure." During recent political campaigns members of the railroad brotherhoods have been very active in doing most of the things prohibited by this rule.

Director General McAdoo is merely trying to give effect on the railways to the spirit of the United States Civil Service rules. He is not trying to apply them to the letter. But doubtless if government ownership and operation of railways should be adopted as a permanent policy, the Civil Service rules would be applied literally, and in their entirety, to officers and employees of the railways. Whether all the 2,000,000 voters employed upon the railroads could be forced to obey them is a momentous question.

It need hardly be said that strict and prolonged enforcement of rules prohibiting railway employees from participating in politics would ultimately result in the destruction of the railway brotherhoods as effective organizations. This the heads of the brotherhood clearly foresee, and undoubtedly it is this which is causing them to make such vigorous and persistent protests. On the other hand, if under government operation railway employees should be allowed to participate in politics without restriction, they probably could, through their organizations, secure a power which would enable them to dictate to both of the great political parties and to the government itself.

If the present Railroad Administration, with its autocratic authority, cannot keep railway employees out of politics in time of war, no future Railroad Administration, possessing less power and exercising it in time of peace, could possibly do so. The test of strength now being made by the director general and the railway brotherhoods is one of national importance and should be a subject of national interest.

The Case of the Engineer

THE trained engineer is a prime necessity in all the complex ramifications of modern warfare. Whether it be in the laying out of trenches, the building of bridges under the enemy's fire, or the erection of buildings for the production of war supplies, the advantages of the engineer's specialized training and skill are fully recognized. So urgent has been the call for technical men for purely military work that the United States army has arranged with the colleges to give short courses of intensive training to selected young men of draft age who include in their number practically all of the high school graduates who would ordinarily be taking up the study of engineering. As a result, practically all civil activities requiring the services of engineers are more or less embarrassed by a lack of properly qualified applicants for the subordinate positions in their technical corps and, as outlined on another page of this issue, this shortage of competent men is being felt keenly by the railroads. At present the job is seeking the engineer while in the past the engineer was usually seeking the job.

Superficially this would seem to indicate that the engineer had *arrived* but, insofar as it concerns the railroads, this is not the case. The increases in compensation accorded him have not been on a parity with the demand for his services, the increased cost of living or the advances granted other classes of employees. The engineers, along with other employees receiving less than $250 monthly, were granted advances under Order No. 27, based upon rates in effect on December 31, 1915, and like all other employees who had not been wresting periodic additions to their pay checks through the agency of collective bargaining, they found that the advances awarded them did not compensate for the decreased purchasing power of their earnings. But unlike most other classes of employees who sought relief from the inadequate provisions of Order No. 27, no supplemental order has been issued in recognition of their contentions. Thus the transitman, the assistant engineer, the resident engineer and others of their kind, find that after spending four years in technical training and from one to ten years in actual experience, they are being paid little if any more than the artisans and foremen of the various crafts in the maintenance of way department and notably less than the foremen, clerks and craftsmen employed by construction contractors.

This inequitable situation is aggravated by daily contact between the engineers and workmen and the humiliation arising from the knowledge that the latter are also thoroughly conversant with these facts. Like foremen on monthly pay the engineers are subjected to a further disadvantage through the fact that unlike the workmen they cannot increase their earnings through over-time, although they are subjected to calls at any hour of the day or night and their services are in no way restricted to definite work day hours.

The present inadequacy of compensation to engineers is not the result alone of inequalities brought about by war conditions. The salaries paid them had been disproportionately low for a number of years previous to the war. This situation was reviewed in our columns about a year ago and disclosed the fact that the decreased attractiveness of engineering positions with railroads had had a noticeable tendency in some cases toward decreasing the caliber of the engineering graduates who applied for railway positions. With an aggravation of this disproportion in compensation under present conditions, a further falling off in the quality of material available for positions is to be expected.

The men who at present compose the engineering departments of American railroads are far too loyal to allow their present plight to lead them into defection from duty, nevertheless it is paramount that this situation be corrected at

The Liberty Loan Is Lagging.

the earliest possible date if the spirit and personnel of the technical staffs of the railroads are to be maintained at the present high standard. The subject deserves consideration also as a matter of simple justice to the men themselves.

The Service Rendered by Railway Supply Companies

MANUFACTURERS of many classes co-operate actively with those to whom they sell their products in getting the best possible results from the use of those products. Numerous manufacturers in the railway supply field, after they have sold materials or devices, send out experts thoroughly familiar with their construction and operation to help the railways get the best use and the longest life from them at the least cost. The development of the service rendered by supply companies has been due largely to requests made by the railways for it.

There has been a tendency on the part of the Division of Purchases of the Railroad Administration to insist that the expense incurred by the railway supply companies in rendering this service shall not be included in the cost of doing business which the companies are required to furnish to the Division of Purchases. The Division of Purchases has defended its attitude on the ground that such service is not needed because, as is contended, the experts of the railways themselves can do everything needed in connection with the maintenance and use of equipment, materials and devices.

Is not the Division of Purchases making a serious mistake in taking this position? There is no difference of opinion over whether service of the kind mentioned is necessary in many cases. The difference arises over whether it should be rendered by the manufacturers and included in their costs and in the prices they charge, or by the experts of the railways and charged directly into railway operating expenses. The real point of issue, then, is whether the service will be better and its cost less in the long run if rendered by the experts of the supply companies or of the railway.

The experts of the supply companies are more likely thoroughly to understand the maintenance and operation of devices made by their companies, because they are specialists in these matters, while railway officers and employees have to handle materials and devices of numerous kinds purchased from many different concerns. Furthermore, it is even more to the interest of the supply company than to that of the railway for the best possible results to be obtained from materials or devices furnished by the supply company, for if the results obtained are poor, the supply company may lose a customer that will be difficult to replace, while the railway can readily turn to other supply companies for material or devices of similar kinds. Experience certainly does seem to show that the best results are obtained from many materials and devices when the supply companies which make and sell them are given full opportunity to co-operate with the railway in carrying out the best methods of maintaining and operating them.

As to cost, it is difficult to see why it should be greater when the service is rendered uniformly by a single supply company to several or many railways than when rendered by each railway to itself. It may be, of course, that in some cases supply companies have added excessive amounts to their prices to cover the cost of service, but if so, this raises the question, not whether they should be allowed to render a valuable service and charge for it, but whether they should be allowed to charge too much for it.

Unless our observation is very misleading, if the service rendered by the supply companies to the railways should be discontinued, no good substitute for it usually would be provided, because the higher officers of the railways are already so overwhelmed with work that they would not furnish the supervision necessary to provide a good substitute. If this should be the case, many materials and devices will wear out faster than they would if the service of the supply companies were secured, and the result will be that the railway scrap pile will increase faster in future than it has even in the past. Now, it is very desirable that a comprehensive program for the reclamation of scrap should be initiated and energetically carried out, but scrap prevention or postponement is under present conditions much more important than scrap reclamation.

The railway equipment and supply companies of the United States, by their co-operation with the railways, have contributed greatly in past years to the improvement of the design, manufacture and operation of all kinds of railway equipment, materials and devices. They can and will contribute even more in future if given the opportunity. The service they are in a position to render in connection with the maintenance and operation of the things they make and sell can be made, if the railways will properly and adequately avail themselves of it, a potent agency for further increasing railroad efficiency.

One Way to Get More Rails

WOULD you rather have 10 miles of 130-lb. rail or 13 miles of 100-lb. rail? This in large measure is the question confronting railway men today. In an endeavor to distribute the steel output of the country among the consumers that are most important to the national welfare, the War Industries Board is drawing a sharp line between the so-called essential and non-essential industries and is curtailing or withholding deliveries to many concerns.

Although the steel output of the country has been increased greatly since 1914, the demands for war purposes have increased so much more rapidly that the surplus of steel available for industrial needs has become small, particularly in recent months. The railways are one of the industries most essential to the welfare of our country and their needs ought to be met. They are normally among the largest users of steel for a wide variety of purposes and their inroads on the available production are therefore heavy. Furthermore, their receipts of new materials, and particularly rails, this year have been hardly half of normal and this has followed several years of subnormal renewals. As a result their necessary demands in 1919 will show an increase over the amount they received this year.

Within recent years there has been a marked tendency towards the adoption of heavier sections of rails. The Lehigh Valley has adopted a 136-lb. section while the Pennsylvania has made a 130-lb. section standard for its main lines. The transitions from 90 lb. to 100 lb. and from 85 lb. to 90 lb. sections have been general. However, the fact that each increase of 5 lb. in weight of section requires 8 tons more steel per mile of track, is now a most important consideration, and in view of the present shortage of steel, it would seem advisable to return to some of the lighter rail sections recently abandoned. In practically all cases, rails of these lighter sections are still carrying the same traffic as the newer patterns, since it normally takes several years to change out all of the rail in a line. By reverting to the old section of rail on each line, no change in standards for fastenings would result, a consideration which would render the adoption of a common standard of rail section unwise at this time.

If the average weight of section rolled next year was reduced 5 lb. it would result in a saving of 100,000 tons. Under normal conditions a suggestion to use a lighter rail would be open to criticism as a step backward, but at present it has much to recommend it as an emergency measure.

Wake Up and Buy Another Bond.

Three Hundred and Fifteen Passengers Killed

ONCE MORE WE have a distressing succession of railroad disasters; the above number representing the total persons, other than employees, killed in only *eight* recent collisions and derailments, four in Europe and four in America. The collisions at Dijon, France, and Dresden, Saxony, follow the disasters in Prussia and Holland recently reported, making four in Europe; and those at Marshfield, Mo., Alliance, Neb., Nashville, Tenn., and Ivanhoe, Ind., make four in the United States. The aggregate of the casualties in the eight accidents, 332 persons killed, and 482 injured, is an impressive number.* It is nothing like the numbers reported from the battlefront; but the pity of it is that the sacrifice seems so needless; and 12 of the victims of the accident at Marshfield were soldiers, aspiring to the honor of making sacrifices of a kind that should more truly exemplify their heroic spirit.

As to the three disasters in Europe, the causes cannot be discussed, as we have no details. We can only make the trite observation that railroads are still operated by fallible human beings and that everywhere the burden on the railroad manager presses, day and night, in peace or in war time. He has to be prepared against carelessness and neglect at every smallest point—as the admiral commanding a blockading fleet must watch on the bridge, at the guns and in the engine-room, against every possible surprise by the enemy, and every imaginable loosening of stitches which may become an aid to the enemy.

Our American problem differs from past instances in the same field mainly in the different relation of the government to the situation. The threat of a law making the use of the block system compulsory—which may be found, more or less definite, in the doings of Congress and the recommendations of the Interstate Commerce Commission every year since 1903—has undoubtedly spurred some roads to introduce the space interval more rapidly than would otherwise have been done; and the investigations of notable collisions and derailments which the commission has published during the past six years, have exposed facts of bad management in many cases which must have aided in emphasizing the problem of safety; but all these developments have left much to be desired.

The Railroad Administration now, like the individual railroad managements under the former condition, must, in specific cases, compare the expenditure of hundreds of thousands of dollars paid out for deaths and injuries, with the expenditure of similar sums for improved appliances, or works, or the establishment of a better personnel, and try to decide whether any mistake has been made; whether the question, Prevention versus Cure, has been properly considered.

There are two principal problems. The outstanding lesson of the butting collision near Nashville is the need of the block system. The Railroad Administration now controls the whole situation. The introduction of the block system is simple and need not take much time. It does take money; but the expenditures which would be required to carry out the proposals of the Interstate Commerce Commission probably would bulk very small as compared with the recent wage increases.

The collision at Ivanhoe emphasizes the automatic train stop issue. The visual block signals were faultless. Here, the present situation is a deadlock. The principal railroads declare, in substance, that the problem is so complicated, difficult and costly that they see nothing to do but to continue to get along as they are now doing; they would expect no ultimate net benefit from the use of any apparatus to apply the brakes of a train independently of the will of the engineman. The Interstate Commerce Commission says in substance that the railroads have made a wrong decision. A few railroads have made some experiments and the Commission has done some investigating, but not much progress is made by either; and everybody is looking to the future. The railroads are right in saying that the problem is difficult. Automatic stops would be costly to introduce and, without a serious diminution of track capacity, would be costly to maintain.

The Railroad Administration is going to appoint a committee to tackle the problem. Unless practically all of the signal engineers of the country are wrong, the task of this committee will be anything but a light one, and its deliberations will not be brief. The least that it can do will be to test one, two or more devices on one, two or more sections of road, and on a considerable number of locomotives. Judging by past experience this work will take many months.

Audible signals retain the human element, but they give it an important prop. Why not test this theory, as well as the brake application theory? The audible roadside signal proposed by the late John T. Cade five years ago is well known to American railroad men. The experience of the Great Western of England and the Northern of France with audible cab signals, whatever the faults of those signals, constitutes too large a body of experience to be neglected. The Paris & Orleans, a large system, is said to have used audible signals for *fifty years* and with such success that *there have been no collisions* due to the failure of an engineman to observe the visual stop signal.†

In the Marshfield case the problem is the same as at Ivanhoe. According to the evidence thus far reported there was coincident negligence on the part of an engineman and a despatcher, the first case of the kind ever reported, so far as we can recall, on a single track line equipped with automatic block signals. The engineman and the despatcher are, no doubt, equally to blame; but from our present point of view, the engineman alone can be considered. The block signal system should be a complete preventive of butting collisions without the support of written meeting orders (as it should always prevent rear collisions without the aid of the flagman). One of the reasons that has impelled railroad managers to introduce automatic block signals on single track lines is to make the function of the operator less important. The consideration of the automatic stop problem must therefore take account of single track as well as double track lines.

The fact that the troublesome questions connected with this country-wide problem are now in the hands of an authority which has plenary power is one on which the railroads and the public are to be congratulated. Enough experimenting has already been done so that probably the tests which the government is expected to make will not have to go over a great amount of elementary ground. And it must be that by this time we are prepared to go about the work in a sincere and businesslike way. That European government which (before the war) put in some cab signals, not because they were believed to be a suitable and necessary thing, but because it was deemed good policy to pacify the people, the legislature, the inventors, or somebody, was pursuing a policy which is to be hoped is now out of date. That policy has had too much favor in this country already.

*The casualties in the eight accidents, four in Europe and four in America, as reported to date are as below:

		Killed	Injured
September 11	Schneidemuehl, Prussia	36	17
September 13	Weesp, Holland	40	100
September 19	Dijon, France	30	20
September 24	Dresden, Saxony	31	50
June 22	Ivanhoe, Ind.	68	127
July 9	Nashville, Tenn.	101	101
September 10	Alliance, Neb.	11	28
September 17	Marshfield, Mo.	15	39
Total		332	482

Since this article was written the cable has brought a report from Malmo, Sweden, of a derailment, at a washout, killing many of the occupants of a 24-car passenger train, the number being vaguely given as from 50 to 250.

†*Railway Age Gazette*, August 7, 1914, page 229.

Letters to the Editor

Setting the Clocks Back

New York City.

To the Editor:

A train is tied to its schedule, and the schedule is tied to the clock. When the hands of the clock are moved forward, therefore, the train should move forward (make up time) and when the hands of the clock are moved back the train should move back.

Some of us found difficulty last Spring, when the clocks and watches were changed, in making it clear to our own minds just where we were at; deciding whether a train which was on the road at 2 a. m. should go forward, or backward, or stand still. The above is a simple rule by which to adjust ourselves to such a change, if we find ourselves confused. And one is to be made on the 27th of October.

It is a rule, I mean, for simplifying our mental processes —not one to be literally acted on. A train cannot at once go forward with the clock—make up 60 minutes—and so it must run late; and it cannot go backwards an hour (or any length of time) because it has no right to the road; and the despatcher will not give it the right, when it has a load of passengers or freight which cannot be thus sent where it does not want to go. But, having got the principle clearly fixed in your head, it will be easy to adjust your mind to the change without any delay or doubt. Trains on the road at 2 a. m. of October 27 will have to stop and wait an hour, unless the despatcher gives them orders to run extra. In some cases, the most convenient thing to do will be to hold the trains, the previous evening, at their starting point, for an hour, and notify the public beforehand that this is going to be done. E. A. K.

Lend the Way They Fight

Get the Proper Scoop for Firemen

Montreal, August 28, 1918.

To the Editor:

I have just read your editorial on "The Real Secret of Fuel Economy," and noted that as usual you hit the nail on the head. May I say something along this line? Some years ago I listened to a gentleman tell in a convention meeting how he had saved coal by keeping so close a check on the quantity consumed by the engines on his road that he could tell each night how much coal had been used on the road that day. The whole story of office checking and reports received did not impress me to any extent, nor do I believe that it would impress any other man who had been out on the road and observed at first hand what you so well name "execution." When the gentleman got through with his speech I asked him this question. "Have you ever considered the importance of the coal scoop used by your firemen?" He answered, "No, not particularly. There are many good scoops."

Let me explain why I asked that question. Some years ago I was in close touch with the locomotive men on a certain railway. One of the things they told me was that the scoop they were supplied with was "rotten." It was too big and therefore picked up more coal than was wanted! that meant a waste of coal. Not being well balanced it took extra energy to handle; that was a waste of energy or man power. I found that the men were cutting the scoop and trying to hammer it into shape to suit them. Now a man on an engine must get results; that is, he must "keep her hot" no matter how much or how little coal he uses or what kind of a shovel he has. If he knows of a way to get results by using less coal and less energy, why not let him do it? The story of my troubles in interesting the men higher up, and finally securing a scoop that had the approval of the firemen is a long one. But I did it, and I believe that this question of a proper scoop has more to do with the saving of coal than much of the stuff we read about. It is "execution" or a part of it. E. J. M.

Buy Bonds to Your UTMOST

Proposed Changes In Time Zones

Buffalo.

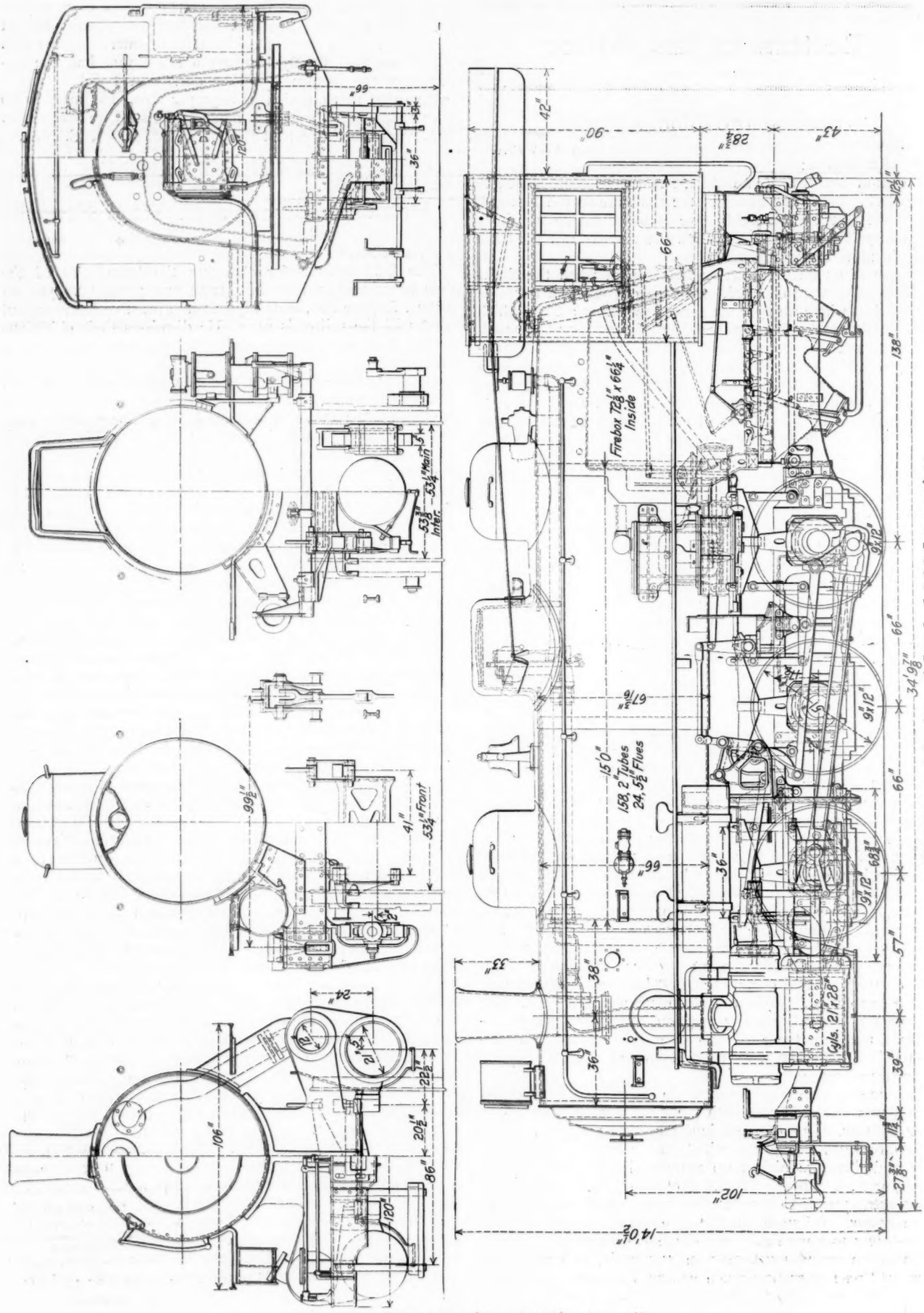
To the Editor:

The bold scheme for changing the boundaries of the time zones proposed by Mr. Judd and printed by you on August 2, page 209, certainly has its attractive features; but what will the railroads say? He dismisses their objections with a paragraph, simply observing that they will have to submit.

In view of the numerous acid and brittle pills from Mr. McAdoo's pharmacy that the railroads have swallowed in the last eight months, it is possible that they will the more meekly submit to this innovation; but even Mr. McAdoo will balk at some things. Mr. Judd seems to think that millions of people are not merely inconvenienced; but that they are deprived of their birthright, in being compelled to live in places like Buffalo and Pittsburgh, where two times are in use. The roads will challenge him to produce proof.

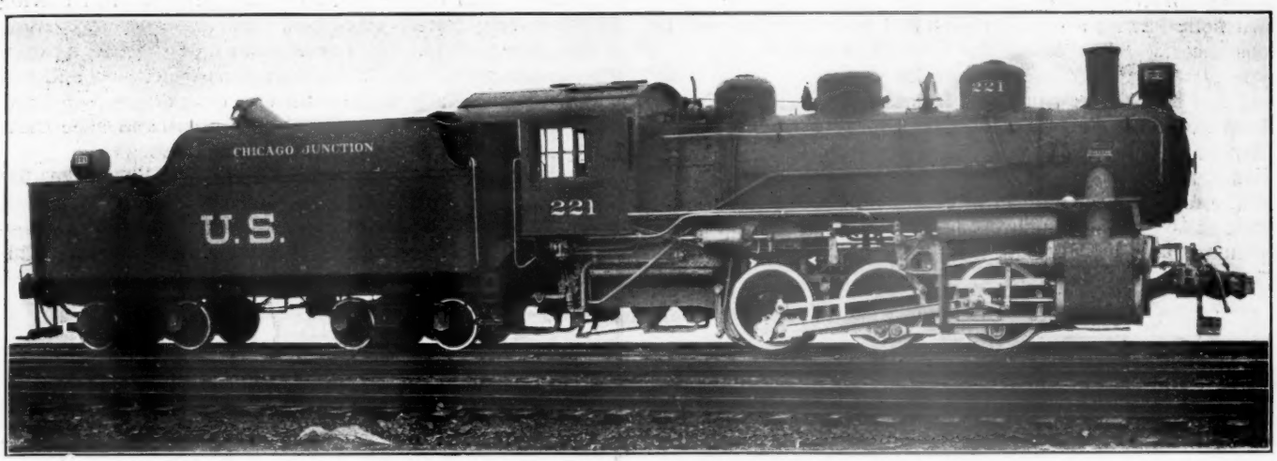
In advance of any final official action, it is perhaps hardly worth while to discuss at any great length the merits of the proposed change; but the American railroad officer who desires to be really progressive will do well not to be scared too easily. Changing watches at other than division termini is not such a terrible thing as it is sometimes said to be. Colonel Henry S. Haines, president of the American Railway Association in 1892, in the course of his annual address before the association, on October 12 of that year, in New York City, dealing with the problem of developing a thoroughly satisfactory code of train rules, declared that "this problem can only be said to have been definitely solved when trains can be run frequently at high speed from start to finish without time card or train order, secure against derailment or collision and controlled only by the block signal."

This advanced ideal, which was so far ahead of its time, is brought to mind by the present discussion. Running trains without a time card means running without watches—or at least, running without depending on the watch as the vital element of safety. The running of trains "controlled only by the block signal" which in 1892 seemed somewhat visionary to, perhaps, the majority of American railroad men, has since become common on many hundreds of miles; and so we have, today, in the matter of watches, a question not of safety, but of convenience. Mr. Judd puts in a strong plea for the convenience of the citizens. The railroads have a right, also, to plead convenience. But when a railroad argues against the change on the ground that it would be unsafe, it will find itself 25 years behind the times—or, at least 25 years behind the president of the American Railway Association. With complete block signal protection the safety of trains is secured "without time card or train order" and, consequently, without watches. The engineman who passes through Sandusky or Toledo Junction at a mile a minute can, therefore, with perfect safety, swap watches at the next stopping place. In our worship of the watch, as in our veneration for the Standard Code, we need to walk with circumspection. The standard rules for the operation of trains under automatic block signals have nothing to say about time, or about clocks or watches. E. Adams.



Elevation and Sections of Standard 0-6-0 Locomotives

The Huns Are Still in France.



Standard Six-Wheeled Switcher for the United States Railroad Administration

U.S.R.A. Standard Six-Wheel Switching Locomotive

The First of the Smallest Government Engines to Be Built; Very Similar to the 0-8-0 Locomotives

THE FIRST OF THE SMALLEST of the standard locomotives to be built for the United States Railroad Administration, the Six-wheel switcher, has been completed by the American Locomotive Company and it is one of fourteen to be delivered to the Chicago Junction Railway. The locomotive weighs 165,000 lb. in working order, 55,000 lb. being carried on each axle. It has 21-in. by 28-in. cylinders, 51-in. drivers, and with a working boiler pressure of 190 lb. a rated tractive effort of 39,100 lb. is obtained. Five locomotives of this design will also be delivered to the Atlantic Coast Line and 20 to the Pennsylvania Lines West in the near future. These engines are in many details similar to the standard 0-8-0 locomotives which were described in the *Railway Age* of September 20, page 542. The clearance dimensions are 10 ft. 2 in. maximum width with 10 ft. over cylinders and 14 ft. ½ in. maximum height. The overall length of engine and tender is 66 ft. 2¾ in.

These locomotives are very similar in design to the Six-wheel switchers that have given such excellent results on the Chicago & North Western in both switching and transfer service and which were briefly described in the *Railway Age Gazette* of March 30, page 698. These two engines have the same size cylinders, the same size drivers, practically the same size firebox, and there is only a difference of 6,000 lb. in the total weight, 2,000 lb. in the tractive effort (this is due to a working boiler pressure of 180 lb.), about 100 sq. ft. in total evaporating heating surface and 40 sq. ft. in superheating surface. The boilers are of the same diameter and of the same general type. These North Western engines have proved so satisfactory that there is every reason to believe that the standard engines, which are so nearly like them, will be found to be efficient. In order to assist the roads that will use these locomotives in determining their proper loading, a tonnage rating chart is included with this article, which is similar to those shown in the *Railway Age* for October 4, page 627.

The boiler of the standard 0-6-0 switcher is of the same general design as that of the Eight-wheel switcher. It was designed for a pressure of 200 lb. but has a working pressure of 190 lb. It is 66 in. in diameter, of the straight telescopic type, with 19/32-in. barrel sheets, 9/16-in. front tube sheet and ½-in. back tube sheet. There are 158 two-inch tubes and twenty-four 5½-in. flues, 15 ft. long over tube sheets. The size and length of the tubes are the same as those in the Eight-wheel switcher. The firebox is 72⅛ in. long by 66¼ in. wide. The door and crown sheets are ⅜ in. thick and the wrapper sheet and back head are 9/16 in. and ½ in. thick, respectively. The water legs are 5 in. wide at the throat and 4½ in. wide on the other three sides. There are three tubes for a Security brick arch and the O'Connor fire-door flange is used. There are 346 flexible, 58 hollow and 383 solid staybolts. The boiler is equipped with a 24-unit type *A* superheater having a heating surface of 442 sq. ft., which with an evaporating surface of 1,886 sq. ft. given an equivalent heating surface of 2,536 sq. ft.

The general design of the frame for these engines is the same as for the 0-8-0 standard locomotives. These frames are 5 in. wide from the front to just back of the rear set of drivers, where a slab section 2 in. wide by 12 in. deep, increasing to 3 in. wide by 18 in. deep at the extreme end is provided. They are 5 in. deep over pedestals and 4⅛ in. deep at the smallest section of the upper rail. The lower rail is 3 in. deep. A heavier section is provided under the cylinders, the depth of the frame being increased to 7⅜ in. and to 9½ in. at the buffer beam. The pedestal binders have a minimum section of 3 in. by 5 in.

The side rods are of slab section, the front rod being 5 in. by 1½ in. and the back rod 4 in. by 1 5/16 in. These are coupled together with a 4-in. knuckle pin. The connecting rods are of channel section, being 6 in. deep with ⅞-in. flanges 3¼ in. wide, and ⅝-in. webs. A cast iron box type piston is used, having Hunt-Spiller bull and packing rings. The piston rod is 3¾ in. in diameter. The crosshead is of the alligator type, having Hunt-Spiller gun iron shoes. The steam distribution is controlled by the Baker valve gear, which in general is of a design similar to that used on the 0-8-0 switchers, many parts of which are duplicates. Both the Lewis and Mellin reverse gears will be used on locomotives in this order. The packing of both the valves and cylinders is of the United States Metallic Packing Company's design.

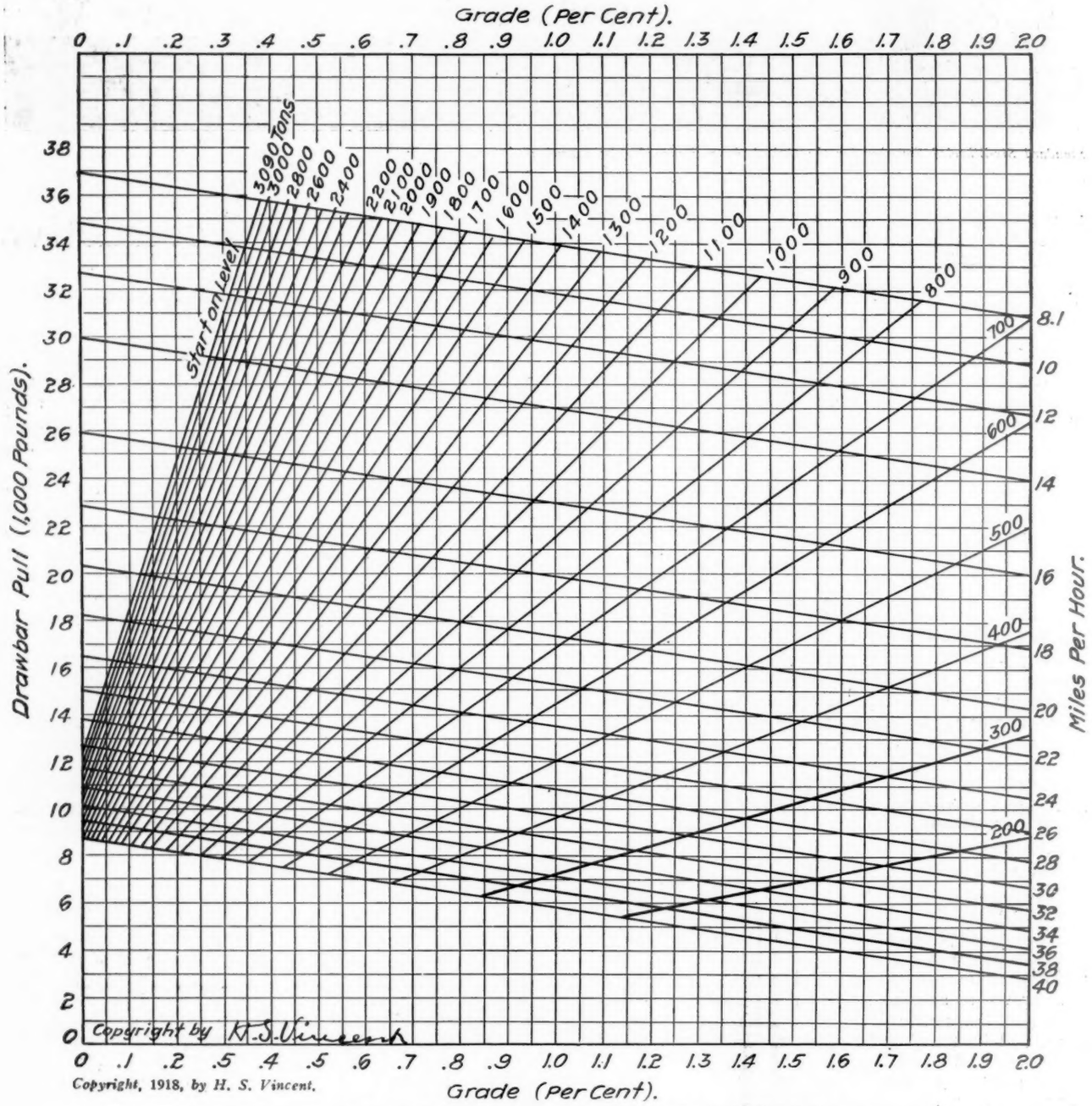
The valves are 10 in. in diameter and are fitted with bushings and packing and bull rings of Hunt-Spiller gun iron. The cylinder bushings are made of the same material.

Liberty Bonds Will Help Push Them Out.

The tender is identical with that used with the 0-8-0 switchers, having a capacity of 8,000 gal. of water and 16 tons of coal. The tank has the Locomotive Stoker Company's type *D* coal pusher, Commonwealth cast steel underframe, and cast steel tender truck side frames to be furnished by the American Steel Foundries and the Buckeye Steel Castings Company. The tender wheels are cast iron, being 33 in. in diameter.

There are a large number of details on this locomotive that are common to the standard Eight-wheel switcher and a few common to all of the standard locomotives. Among the items common to both of the switchers may be mentioned driving axles, driving boxes, shoes and wedges, pedestal crosstie, grates, tube setting, coal pusher, many of the cab fixtures, bumper arrangement, bell details, reverse shaft yoke and bell crank. Such details as the dome cap, coupler, coupler drawhead, eccentric rod bearings, cylinder cocks and gage cocks are common to all of the standard locomotives.

These engines are to be equipped with the Shoemaker fire door, Cole safety valve, Sargent safety three-face water gage, No. 11 non-lifting Nathan injector, Detroit three-feed lubricator, Pyle electric headlight, Westinghouse air brakes, Im-



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Tonnage Rating Chart for the U. S. R. A. Standard Six-Wheel Switcher

The curves of hauling capacity are constructed for a car resistance of 4 lb. per ton. The chart may be used for any other car resistance or for any combination of resistances by converting them into terms of grade.

1 lb. car resistance = .05 per cent grade
1 deg. curve uncompensated = .04 per cent grade

For example, find the tonnage capacity of the locomotive at 16 m. p. h. on a one per cent grade combined with eight-degree uncompensated curve and with a train having a frictional resistance of five pounds per ton.

The combined resistance in terms of grade are 1 + (8 × .04) + (1 × 0.5) = 1.37 per cent at the intersection of the ordinate for 1.37 per cent grade. With the drawbar pull curve for 16 m. p. h. we find that nearly 700 tons is the capacity of the engine.

Only a Quitter Favors a Negotiated Peace Now.

perial type *B* uncoupling device, unit drawbar, Franklin flexible metallic joints, Ashcroft steam gages, Chicago Railway Equipment Company brake beams, Woods tender side bearings, Westinghouse type *D*-3 draft gear, Hancock sprinkler, Chambers throttle and United States Metallic Packing Company pneumatic sanders.

The following table contains the principal data and dimensions of these engines as compared with those built for the Chicago & North Western by the American Locomotive Company a few years ago:

	U. S. R. A. Standard	Chicago & North Western
General Data		
Gage	4 ft. 8½ in.	4 ft. 8½ in.
Service	Switching	Transfer
Fuel	Bit. coal	Bit. coal
Tractive effort	39,100 lb.	37,000 lb.
Weight in working order	165 000 lb.	171,000 lb.
Weight on drivers	165,000 lb.	171,000 lb.
Weight of engine and tender in working order	309,000 lb.	298.000 lb.
Wheel base, driving	11 ft.	11 ft. 6 in.
Wheel base, total	11 ft.	11 ft. 6 in.
Wheel base, engine and tender	49 ft. 3½ in.	47 ft. 6¼ in.
Ratios		
Weight on drivers ÷ tractive effort	4.22	4.62
Total weight ÷ tractive effort	4.22	4.62
Tractive effort × diam. drivers ÷ equivalent heating surface*	782	732
Equivalent heating surface* ÷ grate area	77.3	78.9
Firebox heating surface ÷ equivalent heating surface,* per cent	5.41	5.89
Weight on drivers ÷ equivalent heating surface*	64.7	66.28
Total weight ÷ equivalent heating surface*	64.7	66.28
Volume both cylinders	11.22 cu. ft.	11.22 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	226.5	229.8
Grate area ÷ vol. cylinders	2.94	2.96
Cylinders		
Kind	Simple	Simple
Diameter and stroke	21 in. by 28 in.	21 in. by 28 in.
Valves		
Kind	Piston	Piston
Diameter	10 in.	12 in.
Greatest travel	6 in.	6½ in.
Outside lap	⅞ in.	1 in.
Inside clearance	0 in.	0 in.
Lead in full gear	⅛ in.	⅛ in.
Wheels		
Driving, diameter over tires	51 in.	51 in.
Driving, thickness of tires	3½ in.	3½ in.
Driving journals, main, diameter and length	9 in. by 12 in.	9½ in. by 12 in.
Driving journals, others, diameter and length	9 in. by 12 in.	9½ in. by 12 in.
Boiler		
Style	Straight	Straight
Working pressure	190 lb. per sq. in.	180 lb. per sq. in.
Outside diameter of first ring	66 in.	66 in.
Firebox, length and width	72⅛ in. by 66¼ in.	72⅛ in. by 65¼ in.
Firebox plates, thickness	½ in. and ⅜ in.	⅜ in.
Tubes, number and outside diameter	158—2 in.	160—2 in.
Flues, number and outside diameter	24—5½ in.	22—5⅜ in.
Tubes and flues, length	15 ft.	16 ft.
Heating surface, tubes	1,233 sq. ft.	1,333 sq. ft.
Heating surface, flues	515 sq. ft.	492 sq. ft.
Heating surface, firebox	138 sq. ft.	152 sq. ft.
Heating surface, total	1,886 sq. ft.	1,977 sq. ft.
Superheater heating surface	442 sq. ft.	402 sq. ft.
Equivalent heating surface*	2,549 sq. ft.	2,580 sq. ft.
Grate area	33 sq. ft.	32.7 sq. ft.
Smokestack, height above rail	14 ft. ½ in.	14 ft. 5¾ in.
Center of boiler above rail	102 in.	103 in.
Tender		
Tank	Water bottom	Water bottom
Frame	Commonwealth	Cast steel
Weight	144,000 lb.	127,000 lb.
Wheels, diameter	33 in.	33 in.
Journals, diameter and length	6 in. by 11 in.	5 in. by 9 in.
Water capacity	8,000 gal.	6,500 gal.
Coal capacity	16 tons	10 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

Lend the Way They Fight

$74,971,150 in Bonds Subscribed by Railway Men

Reports to the Director General Show How Well the Loan Is Going in the Federal Regions

REPORTS OF SUBSCRIPTIONS by railroad employees on railroads under Federal control made so far to Director General McAdoo indicate that these employees have purchased a total of $74,971,150 of Fourth Liberty Loan Bonds. Most of the reports are as of the close of business October 4.

The subscriptions of railroad employees so far reported are given herewith in the order of the total subscriptions in each region although the number of employees in the regions varies materially:

Northwestern Region	$16,468,150
Central Western Region	16,406,050
Eastern Region	15,209,100
Southwestern Region	10,392,900
Allegheny Region	7.830 000
Southern Region	7,319,250
Pocahontas Region	1,345,700

Eastern Region

An incomplete report from A. H. Smith, Eastern regional director, as of October 4, shows that out of 288,229 employees, 174,401 or 54 per cent had subscribed to the Fourth Liberty Loan a total of $15,209,100, or an average of $81.00 per subscriber.

Up to October 4, several eastern railroads had passed 90 per cent of their total employees subscribed.

The Maine Central led all lines with 98 per cent, 5,966 of its 6,080 employees having subscribed in the first four days.

The Delaware, Lackawanna & Western was a most creditable second, 20,351 employees out of a total of 21,095 having subscribed with the same promptness, or 96 per cent.

Third was the Grand Rapids & Indiana and fourth the Lehigh & Hudson River, the former with 95 per cent and the latter 94 per cent of all the employees signed up for bonds.

In amount of subscribers and bonds taken, the initial report shows the Pennsylvania Lines west of Pittsburgh leading, there being 47,608 subscribers recorded for a total of $4,091,900.

Up to the close of business October 4, out of 8,399 employees of the Wabash, 6,221 or 74.07 per cent had subscribed to the Fourth Liberty Loan a total of $474,800, or an average of $76.32 per subscriber.

Allegheny Region

The report to the Director General from C. H. Markham, director of the Allegheny region, shows that out of a total of 315,990 railroad employees in that region 106,288 had subscribed to the Fourth Liberty Loan a total of $7,830,000 up to October 4, or an average of $73.67 each; 33.64 per cent of the employees in the region have bought bonds.

Pocahontas Region

N. D. Maher, regional director of Pocahontas region, reported as follows for railroads in his region for the period ending with the close of business October 4.

Chesapeake & Ohio	$432,000
Norfolk & Western	737 850
Virginian	158,900
Norfolk & Portsmouth Belt Line	16,950
Total for the employees of railroads in the Pocahontas Region	$1,345,700

A report from A. C. Needles, federal manager of the Norfolk & Western, shows that every employee of the Norfolk

He Is a Quitter Who Does Not Buy His Limit.

& Western office building at Roanoke, Va., totalling 930 men, women and children, white and colored, has subscribed to the Fourth Liberty Loan a total of $127,600.

Northwestern Region

The total reported to the Director General by R. H. Aishton was $16,468,150, making the Northwestern region the leader of the seven regions.

Reports received from railroads in the Northwestern region up to 10:00 a. m. on October 5, the seventh day of the liberty loan campaign, showed that 158,261 employees out of a total of 266,038 in the region, or 59.59 per cent, had subscribed to the fourth liberty loan. The aggregate amount of the subscriptions was $16,468,150, or an average of $104.05 per subscriber. Reports received up to 10:00 a. m. on the previous day showed subscriptions totaling $14,187,450 as compared with $3,568,665 subscribed by the same roads in the first six days of the third liberty loan campaign. It is apparent, therefore, that the sale of the fourth issue of bonds is progressing more rapidly in this region than was the case with the third issue. The Northern Pacific led the roads of the region in the aggregate amount subscribed on the seventh day, with subscriptions amounting to $3,110,950. The Chicago, St. Paul, Minneapolis & Omaha was first among the large roads in the percentage of employees subscribing, 92.94 per cent of the men and women on its pay roll having taken bonds up to October 5. Both the office of the regional director and that of the Chicago terminal manager reported that 100 per cent of their officers and employees had subscribed. In the regional director's office subscriptions totaled $25,750, or an average of $250 per person.

The Northwestern region has classified its subscriptions according to the kinds of employees. On October 5 the officers and general office employees led in the percentage who had subscribed 75.8 per cent having taken bonds. Mechanical employees were second in rank with 71.89 per cent, and agents and station employees third with 70.67 per cent.

Central Western Region

The Central Western region was second, from the standpoint of total subscriptions. The report of Hale Holden, regional director showed that for the period ended October 4, 50 per cent of the railroad employees in the region had subscribed $16,406,050 to the Fourth Liberty Loan, an average of $93 per subscriber.

Roads in the Central Western region reported subscriptions up to 10:00 a. m. on October 5, to the amount of $16,937,550, or an average of $89 per subscriber. Of the total number of employees in the region, numbering 326,965, 58 per cent or 189,970 had taken bonds. Of the large roads, the Chicago, Rock Island & Pacific led in the percentage of employees subscribing. Of the 27,319 employees of this road in the region, 25,820 or 95 per cent were reported as subscribers up to October 5. Subscriptions for the road totalled $2,096,150 or $81 per subscriber. The Chicago & Alton reported that 78 per cent of its employees had subscribed a total of $552,250, or $81 per subscriber. The Des Moines Union has been added to the list of 100 per cent roads, its 468 employees having subscribed an average of $57 per person.

Southwestern Region

B. F. Bush, regional director of the Southwestern region, reported that in the period ended at midnight October 4 railroad employees of that region had subscribed $10,392,900 to the Fourth Liberty Loan.

Employees of the Missouri Pacific at the end of first week of the Fourth Liberty Loan campaign had purchased $3,500,000 worth of bonds, a million dollars more than the amount subscribed by employees of this railroad in the Third Liberty Loan campaign.

Director General McAdoo has also announced that up to the close of business on Friday, October 4, subscriptions to the Fourth Liberty Loan totaling $194,500 had been made by officers and employees of the central headquarters of the Railroad Administration in Washington where the employees total about 1,000.

Buy Bonds to Your UTMOST

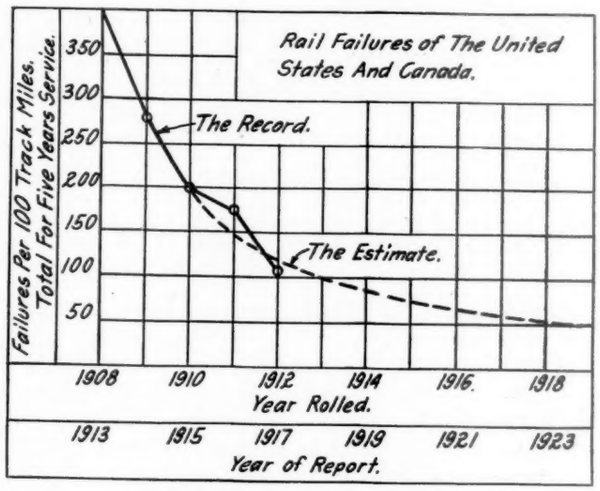
Rail Failure Statistics for 1917*

By M. H. Wickhorst

Engineer of Tests, Rail Committee, American Railway Engineer Association, Chicago

THIS REPORT DEALS with the statistics of rail failures collected for the year ending October 31, 1917, furnished by the railroads of the United States and Canada, in response to a circular sent out by the American Railway Association. The information furnished by each railroad showed the number of tons laid of each year's rolling from each mill, the equivalent number of track miles, and the total number of failures that occurred in each year's rolling from the date laid until October 31, 1916.

The failures were divided into four classes; namely, head, web, base and "broken." The reports cover rollings for



General Diagram of Rail Failures

1912 and succeeding years, and the ages of the rollings in track would average about as shown below:

1912	5 years	1915	2 years
1913	4 years	1916	1 year
1914	3 years	1917	Several months

The tonnages represented by the statistics in this report are shown below.

Year rolled	Bessemer	Open-hearth	Total
1912	211,125	1,308,601	1,519,726
1913	154,412	1,647,659	1,802,071
1914	60,654	1,073,098	1,133,752
1915	12,141	1,075,111	1,087,252
1916	41,737	1,219,694	1,261,431
1917	14,613	681,669	696,282

The equivalent track miles are as follows:

Year rolled	Bessemer	Open-hearth	Total
1912	1,518.71	9,259.97	10,778.68
1913	1,107.32	11,419.28	12,526.60
1914	431.39	7,388.40	7,819.79
1915	90.89	7,253.76	7,344.65
1916	319.44	8,213.09	8,532.53
1917	108.22	4,605.54	4,713.76

The table below shows the comparative performance of Bessemer and open-hearth rails in failures per 100 track miles; the relative failures of Bessemer rails are also indi-

*Abstracted from Bulletin No. 209 of the American Railway Engineering Association.

cated by figuring the failures of open-hearth rails as 100:

Year rolled	Years service	Failures per 100 track miles Open-hearth	Bessemer	Comparative Failures Open-hearth	Bessemer
1912	5	102.7	134.1	100	131
1913	4	68.5	79.7	100	116
1914	3	30.8	70.2	100	228
1915	2	19.0	19.8	100	104

A summary of the general results as given in the reports for 1913 to 1917 inclusive is submitted in the following table showing the average failures per 100 track miles of the rollings for the several years, including both Bessemer and open-hearth rails:

Year Rolled	Years' service 0	1	2	3	4	5
1908	....	....	....	....	....	398.1
1909	....	....	....	....	224.1	277.8
1910	....	....	....	124.0	152.7	198.5
1911	....	....	77.0	104.4	133.3	176.3
1912	....	28.9	32.1	49.3	78.9	107.1
1913	2.0	12.5	25.8	44.8	69.5	....
1914	1.2	8.2	19.8	32.9	....	....
1915	0.7	8.9	19.0	....	....	....
1916	1.6	11.8	....	....	....	....
1917	5.3	....	....	....	....	....

It will be noted that the 1908 to 1912 rollings show successively decreased numbers of failures compared on a basis of five years' service, and the rollings for 1913 and 1914 also show successively decreased failures when compared on a shorter period of service. The more recent or "war-time" rollings, however, are not starting out so well, although the final performance can only be told after they have been in track a sufficient length of time.

In this connection, the writer wishes to call attention to a diagram submitted with a paper entitled, "The Rail Failure Situation," on which was shown the completed rail failure record taken from the reports for 1913, 1914 and 1915, and on which also was projected what we would like the record to be in future reports. This diagram is reproduced in the figure with the insertion of the records from the 1916 and 1917 reports. It will be noted that thus far this estimate is coming true, but when we come to recent rollings, the record may acquire an upward hump. It may be that owing to war conditions the standard of quality of both the manufacture of the rails and the maintenance of the track has not been upheld. It behooves the railroads to watch closely the material going into rails and the condition of the track in order not to have too large a crop of rail breakages blamable indirectly to the war.

Buy Bonds to Your UTMOST

Doings of the United States Railroad Administration

Railroads and Standard Equipment; Bankers Are Praised; Repair Shops to Work on New Locomotives

WASHINGTON, D. C.

SIXTY-FOUR NEW LOCOMOTIVES were shipped by the builders to railroads during the week ended September 28, according to a statement issued by the Railroad Administration. Of these, 42 were delivered by the American Locomotive Company, 7 by the Lima Locomotive Corporation, and 15 by the Baldwin Locomotive Works. The total included 42 of the U. S. R. A. standard types, of which 14 Mikados were delivered to the Union Pacific, 12 Mikados to the Chicago, Milwaukee & St. Paul. 4 switchers to the Toledo & Ohio Central, 6 Mikados to the Seaboard Air Line and 6 Mikados to the Lake Erie & Western.

Railroads Reluctant to Accept Standard Equipment

The allocation of freight cars and locomotives ordered by the Railroad Administration to the various railroads has encountered some obstacles because many railroad companies are displaying considerable reluctance to accept and pay for the standard equipment. The original plan was to have the Railroad Administration acquire the cars and locomotives with the idea of disposing of them to the railroad companies after the period of government control is over if the railroads are returned to their owners. This plan was changed, however, and the 100,000 freight cars and the 1415 locomotives ordered were definitely allocated to the railroad companies to be charged against their budgets and financed by the companies. The roads were asked how many of the standard locomotives they desired and they placed their orders for various numbers, in some instances, at least, because there was no opportunity to secure any other engines. Later some of them asked to have different types than those originally allotted to them and several changes were made when the request was received in time. This has resulted in several changes from the allocation as published in the *Railway Age* of June 28.

About September 1 some of the car builders began to turn out the new freight cars in considerable quantities but a large number of roads have objected to accepting them. Most of the objections have been on the ground that the companies did not want to pay for the cars at the high prices prevailing this year as all the revenue from their use goes to the Railroad Administration and the companies can get nothing but interest and the amount of the depreciation. In other cases the objection was to the type of the standard cars. Some changes have been made in the allocation, particularly where the road has been able to show that more cars were allotted to it than should have been, perhaps because an order for cars previously placed by the road had not been taken into consideration, but generally the Railroad Administration is taking the position that the companies must take the cars and pay for them. On the other hand, it is understood that some of the companies are refusing to accept any cars they have not ordered. Thus far the Railroad Administration has advanced the funds necessary to pay for the cars and locomotives delivered and up to October 1 a total of $30,660,255 had been so advanced.

McAdoo Praises Bankers

In authorizing an announcement with regard to the extension of certain notes of the Baltimore & Ohio Director General McAdoo took occasion to express his appreciation of the public spirit and patriotism of American bankers generally, and particularly of the attitude of the two New York banking firms through whose co-operation the extension in question was arranged without commission.

"My duties as Secretary of the Treasury and director general of the railroads, involving as they do the raising of enormous sums of money, have been greatly lightened by the reliance that I have come to feel upon the wholesome public spirit of the American banking fraternity," he said. "With but few exceptions they have shown themselves willing and eager to help in distributing the financial burden of the war that is now being carried with an ease that surprised the world. They have helped to educate the financial community to a broader vision and to widen the field

America's Answer—$6,000,000,000 in Liberty Bonds.

of investments in this country and in so doing have been themselves benefited, for from being American bankers they have become world bankers with all the duties and opportunities that the description implies."

The Division of Finance and Purchases was advised a short time ago that the Baltimore & Ohio had $22,500,000 short time collateral notes maturing October 1; that the railroad had made inquiries as to the prospect for renewal as result of which authority was requested to arrange for a four months' extension on an interest basis of 7¾ per cent, including banker's commission. In reply the company was informed that market conditions did not, in the opinion of the director general, justify the rate asked and that in agreeing to it he would be lending his approval to an interest charge which he considered unwarranted in the present conditions. The Division of Finance and Purchases thereupon telegraphed a number of banks who were understood to be holders of the maturing Baltimore & Ohio notes asking whether they would be willing, under the circumstances, to accept a renewal at 6 per cent. With but two or three exceptions these banks responded promptly agreeing to renew at 6 per cent. Upon receipt of these replies the Baltimore & Ohio was notified that the holders of approximately $11,000,000 of the notes had readily agreed to the desired extension and it was suggested that the railroad should communicate with the remaining holders and ascertain their attitude in the matter, with the understanding that the Railroad Administration would furnish the railroad with any money that might be required to pay off the holders who refused to extend their notes at 6 per cent.

As a result the Baltimore & Ohio has just been able to inform the director general that the holders of about 80 per cent of the outstanding notes have agreed to an extension at 6 per cent so that the government will be called upon to supply only about $4,000,000 out of the $22,500,000.

Railroad Shops Have Capacity for Work on New Locomotives

The condition of locomotive repair shops of the various railroads has been improved so much during the year that in addition to repairing more than 500 more locomotives per week than last January, some of them now have surplus capacity to undertake some work to relieve the plants of the locomotive builders. Last January the railroads were trying to have some of their locomotive repair work done by the locomotive builders. Now the builders are doing practically nothing in the way of repairing locomotives for the Railroad Administration and at the request of the Baldwin Locomotive Works, the mechanical department of the Railroad Administration has ascertained that at some shops there are machines which are not being used to maximum capacity and arrangements have been made to allow the surplus capacity to be used on work for the Baldwin company. The work thus far arranged for includes the following:

The Philadelphia & Reading shop at Reading, Pa., will plane and slot locomotive frames at the rate of two per week and will build new boilers at the rate of one per week.

The Delaware, Lackawanna & Western will plane and slot 50 sets of frames and finish 50 sets of rods per week.

The Lehigh Valley shops at Sayre, Pa., will plane three sets of frames per week and the shops at Easton will finish 16 driving boxes per week.

The Erie at its Meadville, Pa., shops will finish shoes and wedges for four locomotives per week and at the Susquehanna shops cylinders for one locomotive per week and frames for three locomotives per week. At its Dunmore shops it will finish driving boxes and shoes and wedges for three locomotives per week.

The New York Central will build new boilers at its West Albany, N. Y., shops.

It is understood that under no circumstances will this work be allowed to interfere with the regular shop output.

Report of Wage Increases for Five Months Required

The Division of Public Service and Accounting has issued a circular for the purpose of determining the effect of the wage increases upon operating expenses for the five months ended May 31, 1918, requiring each Class 1 road to file a report of the amount of the wage increases for that period. In a circular issued some time ago carriers under federal control were directed to include in their accounts for June the actual or estimated amount of the wage increases for the five months ended May 31. It is now desired to secure a more accurate statement, particularly in view of the fact that later supplements of General Order 27, making further increases in wages retroactive to January 1, have increased the amount. The information called for is the amount of wage increases chargeable to operating expenses classified among the appropriate general accounts without reference to those increases which relate to additions and betterments.

Instructions for Changing Back to Standard Time

On the recommendation of the Committee on Transportation of the American Railway Association Director General McAdoo has issued, in General Order No. 45 the following instructions, in connection with changing the hands of the clocks and watches on Sunday, October 27, as provided in the federal law "To Save Daylight and to Provide Standard Time for the United States":

First: At 2:00 a. m., present standard time, Sunday, October 27, 1918, all clocks and watches in train despatchers' offices, and in all other offices open at that time, must be turned back one hour, to indicate 1:00 a. m. Employees in every open office must, as soon as the change has been made, compare time with the train despatcher. Clocks and watches in all offices at the first opening, at or after the time the change becomes effective, must be turned back to conform to the new standard time, and employees, before assuming duties in such offices, must, after the change is made, compare time with the train despatcher.

Second: Each railroad will issue necessary instructions and arrange for such supervision and check of the watches of its employees as to insure that they have been properly changed to conform to the new standard time.

Third: Regular trains must be held to conform to schedules after change in time.

Fourth: Owing to the varying conditions which will prevail on the railroads of the United States, it is not advisable to issue a uniform rule or order to cover other details involved in the movement of trains at the period the change in standard time becomes effective. Therefore, each railroad must adopt such measures as may be necessary properly to safeguard the movement of its trains on the road at the time of the change.

Violation of Safety Laws

In General Order No. 46 the director general states that the records of the Interstate Commerce Commission and the reports of its inspectors show so many instances of violation of federal statutes for the promotion of safety that it is evident that sufficient attention is not being paid to the provision of General Order No. 8 issued on February 21 that the safety laws, and orders of the Interstate Commerce Commission made in accordance therewith, must be fully complied with. Enforcement of the provisions of this paragraph of the order will be placed under the direction of Frank McManamy, assistant director of the division of operation, who will receive reports of such violations and handle them either with the regional directors; or direct, if found necessary. All necessary investigations in connection therewith

will be conducted by the assistant director of operation and reports of violations will be sent to the regional directors for correction and not for further investigation.

The Division of Operation has also issued Mechanical Department Circular No. 3 signed by Mr. McManamy, stating that attention has been brought to numerous instances where it has been necessary for Interstate Commerce Commission inspectors to order locomotives out of service for repairs under circumstances which indicate wilful violation of the federal laws regarding safety and also where locomotives were not in condition to render efficient and economical service. In the future, the circular says, master mechanics and shop and roundhouse foremen will be required to know that locomotives are in good condition before leaving terminals and it is directed that locomotives that are in violation of the federal laws or that are not in condition to make a successful trip should be repaired before being offered for service.

Demurrage Rules Amended

Director General McAdoo has issued Supplement No. 1 to General Order No. 7, effective on October 15, modifying the national car demurrage rules to include in the exceptions to the rules "private cars on private tracks when the ownership of the car and of the track is the same." In the rules which were made effective on February 10 the exception as to private cars read as follows: "Empty private cars stored on carriers' or private tracks, provided such cars have not been placed or tendered for loading on the orders of a shipper." The new rules also include the following definitions:

"Private Car.—A car having other than railroad ownership. A lease of a car is equivalent to ownership. Private cars must have the full name of owner painted or stenciled thereon, or must be boarded with full name of owner or lessee.

"Private Track.—A track outside of carrier's right of way, yard and terminals, and of which the carrier does not own either the rails, ties, roadbed, or right of way; or a track or portion of a track which is devoted to the purposes of its user either by lease or written agreement."

The instructions and explanations which accompany the rules provide that private cars while held under constructive placement for delivery upon the tracks of their owners are subject to demurrage charges after the expiration of 48 hours free time.

The exception as to empty cars remains as before, but the instructions and explanations state that empty private cars stored on tracks not owned by the owners of such cars, and switched by carriers, taken for loading without order or requisition from shipper, and without formal assignment by carrier's agent, shall be regarded as placed for loading when actual loading is begun. Private cars which have been loaded from the tracks of their owners, received from such tracks and held by the railroad for forwarding directions, are subject to demurrage charges from the first 7:00 a. m. after they are received until proper forwarding directions are furnished with no free time allowance and without notice.

Under the new rules, except as otherwise provided, private cars while in railroad service, whether on carrier's or private tracks, are subject to the demurrage rules to the same extent as cars of railroad ownership, and empty private cars are in railroad service from the time they are placed by the carrier for loading or tendered for loading on the orders of a shipper. Private cars under lading are in railroad service until the lading is removed and cars are regularly released.

Government Will Lend to Railroads at Six Per Cent

Believing that it will be for the general welfare and a factor in beneficially stabilizing money rates, the director general announces that as to all railroad mortgage bond issues which may mature between the present time and July 1, 1919, where railroad companies may find it impracticable to obtain money for the renewal of their maturing bonds at a rate of interest which the director general may feel warranted in approving, he will lend to all such railroad companies on safe and reasonable security at the rate of six per cent per annum such funds as may be necessary to pay off their maturing issues of mortgage, equipment or debenture bonds.

The aid thus rendered by the director general to maintain on a moderate basis the rates of interest which railroads may be required to pay on loans must not be interpreted by them as relieving them of the duty and responsibility of using their best efforts to provide for their own financial needs as occasions arise, but is intended to give them assurance that the money required for their legitimate needs, and for which they can offer satisfactory security, can be obtained without their being required to pay exorbitant or unreasonable rates or commissions.

"While the co-operation which the government has received and is receiving from the bankers, capitalists and investors of the country generally, in the huge task of financing the war and of providing the vast credits imperatively demanded for our requirements and for our Allies, has been admirable," the statement says, "at the same time there has been a tendency on the part of some bankers and money lenders to demand exorbitant rates on railroad loans which are fully protected, and for which there is no justification.

"Through the War Finance Corporation, farm loan banks, and in other ways, the powers of the government have been exercised for the stabilization of interest rates and the prevention of excessive charges for the use of money. There is sufficient capital and credit in this country at present to meet legitimate needs, if carefully conserved and used, and there is no reason why excessive rates should be demanded where the security afforded is sound and condition and character of the borrower entitles him to credit.

"The manner in which interest rates on the London market have been regulated and kept within reasonable bounds furnishes an interesting study, and has been a potent factor in the successful financing of Great Britain's war necessities."

Oklahoma Rates Reduced

Director General McAdoo, convinced of the necessity of making some revision in the class rates applicable within the state of Oklahoma, has promulgated a new schedule to become effective on 10 days' notice. This schedule was decided upon after several conferences with Chairman Humphrey and Commissioner Russell of the Oklahoma Corporation Commission, also Senator Owen and Congressmen Ferris, Thompson, Carter, Chandler, Morgan, McClintic, McKeown and Hastings, together with W. V. Hardie, manager of the Oklahoma Traffic Association, and is fully satisfactory to them.

Oklahoma's trouble lay in the fact that the application within the state of the so-called Shreveport scale of class rates constituted in itself a considerable advance over the state commission's scale previously in effect and this, with the additional 25 per cent increase provided for in General Order No. 28, resulted in rates about 60 per cent higher than formerly in effect, and considerably in excess of the interstate rates from Kansas, Missouri and Arkansas into Oklahoma, the latter having been increased but 25 per cent.

The new schedule represents approximately an average of the rates in a number of Southwestern states. It does not fully equalize Oklahoma with interstate competitors, but in the opinion of the Oklahoma representatives will provide the needed temporary relief from a condition which was affecting Oklahoma's industries to a material extent.

For the present the interstate rates from states to the north and east into Oklahoma, which are lower than the new Oklahoma schedule, are to remain in effect; but further consideration is being given by the Railroad Administration to a

He Must Give Up ALL His Ill-Gotten Gains.

more comprehensive revision and equalization of conflicting schedules in the Southwest.

Agricultural Department Activities

The Railroad Administration, through the Agricultural Section of the Division of Traffic and through other departments, is co-operating with the Food Administration and the Council of National Defense in state campaigns to reduce the number of animals killed by trains. On one railroad last year, the value of claims paid for livestock killed was $600,000. Campaigns are already under way in several of the Southern and Southwestern states where these losses principally occur, to secure the co-operation of owners of stock in keeping it off the right of way and to secure a better enforcement of stock laws. As a result of these efforts, a large conservation of food supply and of leather has been obtained.

Several of the principal railroads in the Southern region, through the agricultural departments, have sent their livestock agents to drought stricken sections of Texas to assist southeastern purchasers in selecting suitable cattle for bringing into the southeastern states for breeding purposes and for fattening.

The railroads, through their agricultural departments, also are co-operating with the war department and Red Cross in the collection of fruit pits and nut shells for making charcoal for gas masks for our soldiers. They have taken the matter up with canning plants, hotels, local agents and others and are giving all the help possible to this important work.

The Agricultural Section of the Railroad Administration is also co-operating actively with the state agricultural authorities in Missouri in an energetic campaign to increase the number of silos. The railroads in Missouri are sending out circulars and pamphlets, showing the great advantage to farmers of using silage.

A meeting of the heads of the agricultural development work of the federal railroads in the Eastern and Allegheny regions has been called by J. L. Edwards, manager of the Agricultural Section, at the office of Regional Director A. H. Smith in New York for Friday, October 11, for the purpose of working out plans for more thorough co-operation with the work of the United States and state departments of agriculture and the Food Administration and for a general discussion of the development work in hand and plans for future work.

Marine War Risk Insurance

Director General McAdoo has issued a statement saying that from the number of inquiries received, it is evident that there is not a general understanding as to the inclusion of war risk insurance by the Railroad Administration to cover the movement of traffic by the coastwise steamer lines, particularly in the case of shipments diverted to these lines by the Railroad Administration, for the relief of the rail lines over which it may have been routed by the shipper. The rates of the coastwise lines under federal control will include war risk insurance and the tariffs will so provide. These lines are under the jurisdiction of H. B. Walker, federal manager, New York, and comprise the Old Dominion S. S. Company, Clyde Line, Ocean S. S. Company, Merchants & Miners Transportation Company, Southern S. S. Company, Mallory Line, and the Morgan Line (Southern Pacific).

To remove any uncertainty as to the assumption of war risk by the government, the following notation is to be placed on bills of lading covering coastwise water borne traffic: "Rates include war risk and marine insurance subject to the provisions of the tariffs on file with the Interstate Commerce Commission notwithstanding any condition to the contrary in this bill of lading."

Where the traffic is routed by the shipper and arbitrarily diverted by the Railroad Administration for its purposes, the rates and charges via the shippers' route will be protected, and in all cases of this kind, where a shipment is diverted from a rail route to a water route, the movement over the water route will be protected by both marine and war risk insurance.

Wage Orders

Amendment No. 1 to Supplement No. 4 to General Order No. 27, provides as follows:

To remove certain inequities resulting from the application of section 2, Article III, of Supplement No. 4 to General Order No. 27, and as a substitute therefor, it is hereby ordered, effective September 1st, 1918:

Compensation for Helpers—Shop Crafts

For helpers in the basic trades specified in Supplement No. 4 to General Order No. 27, who, on January 1, 1918, were receiving less than 32 cents per hour, establish a basic minimum rate of 32 cents per hour; to this basic minimum rate, and all hourly rates of 32 cents per hour and above in effect as of January 1, 1918, add 13 cents per hour, establishing a minimum rate of 45 cents per hour.

Interpretation No. 1 to Supplement No. 4 provides:

Employees in any department, performing the classes of work specified in Supplement No. 4 to General Order No. 27 and Addendum No. 2 thereto, shall receive the rates of pay and be govened by the conditions of employment provided for therein.

If their present pay-roll classification does not conform, they shall be given correct classification.

Division of Labor

H. H. Reed, chief clerk of the Division of Labor, has been appointed special assistant to the director of the Division of Labor. Mr. Reed has been assigned to handling correspondence and cases to be submitted to railway boards of adjustment, as provided in General Orders Nos. 13 and 29, and such similar orders as may be issued by the director general creating additional railway boards of adjustment. He will also handle for the director of the division, W. S. Carter, correspondence and matters pertaining to interpretations of wage orders, submitted through the Division of Labor to the Board of Railroad Wages and Working Conditions in accordance with Supplement No. 6 to General Order No. 27.

Brotherhoods Again Seek Modification of Political Order

The heads of the four brotherhoods of train service employees held another conference with Director General McAdoo on October 3 regarding their protest against the order requiring all railway employees to abstain from political activities. It is understood that Mr. McAdoo remained firm in his attitude as expressed in the order, but that another conference will be held on October 15, at which the brotherhood leaders will endeavor again to have the order modified.

Instructions for Painting Freight Cars

The Division of Operation, in mechanical department circular No. 1, repeats the series of instructions regarding the painting of freight cars which were previously issued by the regional directors, with an additional instruction intended to make it clear that these directions apply equally to all cars owned by railroads under government control and that all cars should be repainted in accordance with the instructions when on repair tracks, regardless of ownership.

Committee on Standards

The regular monthly meeting of the Committee on Standards for Cars and Locomotives, which was to have been held at Washington on October 15, has been postponed and the next meeting will be held on November 19.

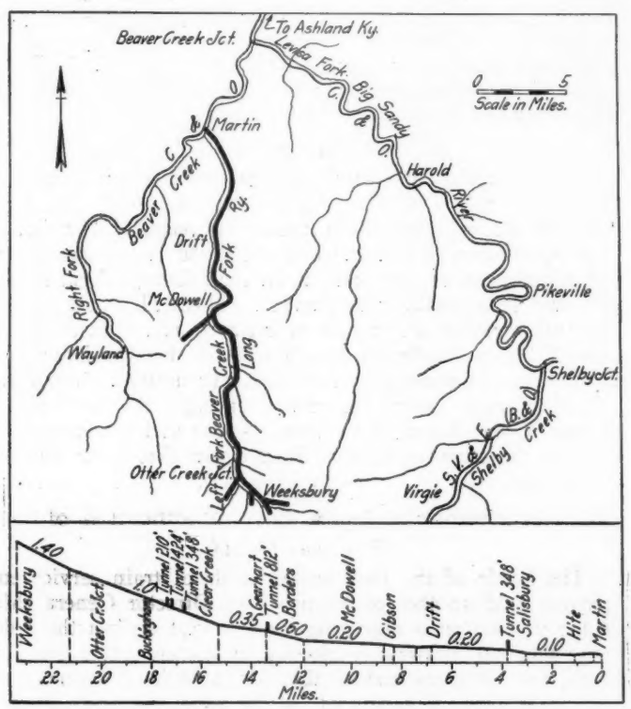
The B. & O. Completes the Long Fork Railway

This Line Is an Important Step in the Development of the Coal Resources of Eastern Kentucky

By A. C. Clark
Assistant to Chief Engineer, Baltimore & Ohio

THE RECENT COMPLETION of the Long Fork Railway in Floyd County, Kentucky, marks another step in the development of the vast coal area situated in the eastern part of that state. This road is a subsidiary of the Baltimore & Ohio and extends from the forks of Beaver creek up the Left Branch to mines of the Elkhorn-Piney Coal Co. at Weeksbury, near the headwaters of the creek. The length of main line is 23.4 miles. There are also four short branch lines aggregating 6.5 miles of single track.

The purchase and consolidation of coal properties in this territory was carried out largely by the Beaver Creek Consolidated Coal Co. about 1905-06. However, no active development was attempted until 1911, when an agreement was entered into with the Chesapeake & Ohio for the extension of its Elkhorn & Beaver Valley branch from Beaver creek on the Big Sandy division to the headwaters of the right fork of Beaver creek. The Chesapeake & Ohio completed the construction of this branch in 1913 and the line was placed in operation the following year.



Map and Profile of the Line

With transportation facilities available along the right fork of Beaver creek, the coal operators turned their attention to their properties on the left fork. With the assurance that coal would be ready for shipment upon the completion of the line, the Baltimore & Ohio undertook the construction of the Long Fork Railway in 1916. The new line leaves the Elkhorn & Beaver Valley branch of the Chesapeake & Ohio at Martin, a small settlement at the junction of the right and left forks of Beaver creek. From Martin the line proceeds up the valley of the left fork, following the course of the stream closely throughout its entire length. Fortunately the valley is wide for a mountain stream and it was found possible to locate a line devoid of many of the difficulties generally encountered in mountainous country. It was necessary, however, to undertake no less than 26 stream changes

Bridge Over Left Fork of Beaver Creek Near Mouth of Caleb Fork

in order to keep within the limit of a maximum curvature of 10 deg.

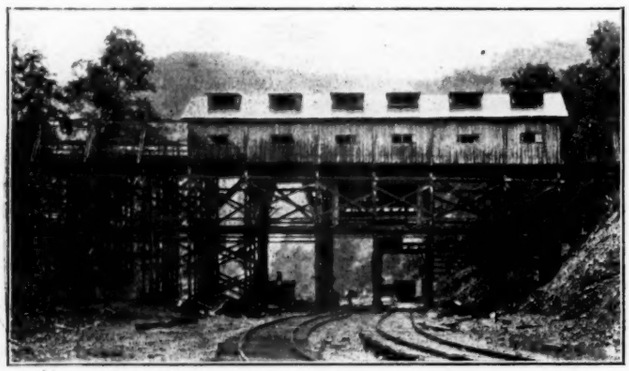
Paralleling the water level of the creek at an elevation sufficient to avoid overflow during high water, the line rises on a maximum 0.6 per cent compensated grade for the first 15 miles out of Martin. From this point to the mouth of Otter creek, a 1.0 per cent compensated grade opposes the empty movement while the last two miles on the upper end of the line are on a 1.4 per cent basis. About 55 per cent of the line is constructed on tangent.

Looking North Towards Tunnel No. 3

There are five tunnels on the line with a total length of 2,142 ft. With the exception of tunnel No. 2 which was driven through sandstone for a distance of 812 ft., all tunnelling was through a formation of stratified shale which was not at all difficult to work. In the case of tunnel No. 1, seams in the shale formation permitted such rapid disintegra-

tion that it was found necessary to line the tunnel throughout. It is planned to line all of the tunnels eventually except No. 2 where the sandstone guarantees a permanent natural structure.

To expedite the work at tunnel No. 2, a rectangular drift, approximately 9 ft. by 14 ft. was driven throughout the entire length of the tunnel, the work being carried on from both ends simultaneously. The required 12-cu. yd. section was then obtained by removing the material from the sides and top of this drift, working from both ends of the tunnel

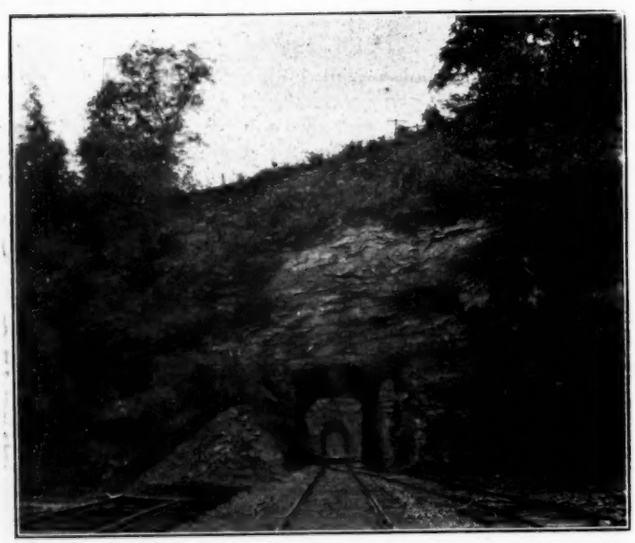


One of the Large Coal Tipples

and from two headings located approximately at the one third points. The method was found effective as a time saver.

There are nine bridges on the line, all of which are of the deck plate girder type on concrete piers and abutments. The spans are all of moderate length.

The line is single track throughout, is provided with two 85-car passing sidings and is laid with 85-lb. rail on standard ballast section. Both granulated slag and washed gravel were



Looking North Through Tunnels Nos. 4 and 5

used as ballast. It was necessary to haul the gravel from Huntington, W. Va., while the slag came from Ashland, Ky., Wheeling, W. Va., and Jackson, Ohio.

An engine house, fully equipped with a machine shop and repair facilities, has been established at Weeksbury, the upper terminal of the line. All engine and car repair work will be carried out at this point which is conveniently located with reference to the larger mining operations located at the head of the valley.

The principal difficulties encountered in the construction of this line were of a practical rather than a technical nature. The winter of 1916-17 covered a period of sudden weather changes accompanied by alternate violent rainstorms and heavy snows and the following spring witnessed a succession of freshets which threatened to hamper the work seriously at times. In addition, it was almost impossible to secure an adequate supply of labor with which to maintain the desired rate of progress. Particularly during the past winter with its general labor shortage throughout the country, it was practically useless to attempt to induce experienced workmen to remain in this mountainous district. Of necessity, recourse was had to the inexperienced local labor supply, and this added a severe handicap to the task of completing the work in the scheduled time.

When the line was turned over to the operating department in May, 1918, there were already 30 mine openings in the valley. It is estimated that these mines have a coal supply of 550,000,000 tons available above water grade. No prospecting has yet been done below water level, but it is regarded as not at all improbable that additional seams of commercial value will be found whenever such prospecting and operation is justified. The coal taken from this district closely resembles the Jenkins coal mined along the Sandy Valley & Elkhorn to the south. Analyses of the product show it to be very low in ash and with a small percentage of sulphur and phosphorus. It is essentially a "by-product" coal and as such forms a welcome source of additional supply for the growing by-product coking industry in this country.

The construction of this line was carried out by Bates & Rogers, contractors, under the supervision of H. A. Lane, chief engineer, Baltimore & Ohio, and Richard Mather, district engineer of that road.

Report on Nashville Collision

THE INTERSTATE COMMERCE COMMISSION has issued the report of W. P. Borland, chief of the Bureau of Safety, dated August 16, on the butting collision near Nashville, Tenn., July 9, on the Nashville, Chattanooga & St. Louis, in which two passenger trains, No. 4 northbound, and No. 1 southbound, met at about 50 miles an hour, and six carloads of passengers were killed or injured. The facts are substantially as stated in the reports already published in the *Railway Age*, July 19, page 134, and October 4, page 640; but the number of casualties is given as 202, namely: 87 passengers and 14 employees killed, and 87 passengers and 14 employees injured. The enginemen and firemen of both trains, and the porter of train 4, were killed.

Northbound train No. 4 left Nashville at 7:07 a. m., and passed "Shops" at 7:15 a. m. It had passed from the double track and only about its length beyond the signal cabin at Shops when (the operator in the cabin having been informed by the despatcher that the train should have been stopped) it was signaled from the cabin by the whistle which is provided there for such emergencies; but the signal was not heeded. It will be recalled that the flagman of No. 4 was an inexperienced man, never having been on this train before. Conductor Eubank, in his testimony, says that while still on the double track, between Nashville and Shops, he told the flagman to look out for train No. 1, at the same time delivering to him the order making a meeting point between No. 4 and No. 7, which order also gave the number of the locomotive of train No. 1; but the flagman in his testimony says that this order was given to him by the conductor after reaching Shops; and that the conductor said nothing to him about looking out for train No. 1. The report makes no comment or explanation concerning this discrepancy in the testimony. This flagman's entire experience as a trainman appears to have been in making two trips as a flagman on a freight train.

Conductor Riggle, who alternated with Conductor Eubank on train No. 4, said that he always kept train No. 1 in mind

until "Shops" was passed; but he depended upon the flagman, porter and enginemen to identify the train.

The traveling engineer testified that Engineman Kennedy, of train No. 4, who was killed, was a very careful man and one who obeyed the rules. The traveling engineer had observed that enginemen, passing Shops, took the operator's word as to whether the single track was clear of superior trains; and thereafter, on May 28 last, the superintendent issued a bulletin forbidding such practice; the bulletin required northbound trains to assure themselves from the train register that superior southbound trains had arrived, or else to get an order to that effect from the train despatcher.

In its conclusion the report says:

"Conductor Eubank of No. 4 apparently relied wholly upon the other members of the train crew to identify train No. 1 and allowed his train to pass from double track to single track at Shops without making any effort to ascertain whether train No. 1 had arrived. His statement that he was busy collecting tickets and that he passed a train in the yards between Nashville and Shops, which he did not see, but assumed was train No. 1, can not be considered a valid reason for overlooking or failing to identify that train. His first duty was to provide for the safety of his train and see to it that it did not pass from double track to single track before train No. 1 had arrived; and particularly in a yard where switching movements are constantly being made, he was extremely negligent in assuming that a passing train was No. 1 without seeing it and without being notified of its identity by some member of his crew who had seen it.

"That responsible operating officers were well aware of the conditions existing at Shops (trains passing without being properly assured of the right to the road) is evidenced by the superintendent's bulletin issued last May. It appears that bulletin contemplated orders would be issued and delivered to outbound trains at Shops giving notice of superior trains which had arrived, but no practice of this nature was in effect. The custom of merely notifying outbound train crews of the number of the locomotive hauling an opposing superior train was utterly inadequate as a safeguard, for under the practices followed, the train crew was required to observe and correctly read the number of the passing locomotive under all conditions of weather and traffic. The records show that during the month of June, an average of 23 trains daily were operated to and from Nashville over this division, and the number of yard movements materially increased the density of traffic between Nashville and Shops.

"Under these circumstances, it is absolutely essential to safety that some means be provided for supplying to outbound crews definite information regarding opposing superior trains, as, for example, by the maintenance of a train register at Shops, or by issuing orders to outbound trains at Shops, giving definite notice of the arrival at that point of superior trains which had not arrived at Nashville at the time of departure of the outbound trains.

"This accident would have been prevented, beyond question of doubt, by a properly operated manual block system on the single-track line north of Shops, for which all necessary appliances and facilities were already available. The time table indicates that between Nashville and Hickman, Ky., 172 miles, there are 27 train-order offices, of which 14 are continuously operated.

On this line there are four passenger trains in each direction, and a total of 12 scheduled freight trains. With this volume of traffic, and in view of the universally recognized features of increased safety afforded by the block system, there can be no valid excuse for the failure or neglect on the part of the railroad company to utilize existing facilities for the purpose of operating a block system on that line.

"This accident presents a more appalling record of deaths and injuries than any other accident investigated by the Commission since the accident-investigation work was begun in 1912. Had steel cars been used in these trains, the toll of human lives taken would undoubtedly have been very much less. * * *"

Lend the Way They Fight

The Mechanics of Curve Resistance*

By J. S. Sullivan

Consulting Engineer, Winnipeg, Man.

A. M. WELLINGTON stated: "The coning now put in wheels is chiefly useful as a prospective provision for wear; and experiment shows that whether the wheels be coned or not, the tendency of *any rectangular wheel-base is to roll very nearly in a straight line.*" This statement appears logical but unfortunately it is not entirely true as the writer will try to prove further on. What Mr. Wellington said years ago is still true, that "Curve resistance has never yet been exhaustively investigated, and our knowledge is in several respects deficient."

Mr. Wellington also stated, "The consequences of this condition of things are these: first, the disproportion in the diameter of the wheels: *hence the necessary longitudinal slipping, and hence the curve resistance, is materially increased.* If the increase of radius of wheel be 3/16 in., *the extra distance slipped through* per station of 100 ft. by one wheel will be 1.16 ft." The writer believes that the emphasized statements are exactly opposite to the facts.

Referring to the theory of centrifugal force in this problem, the writer believes that with track having anything like the correct elevation of the outer rail this is a very minor factor. The theory of obliquity of traction, of course, is absurd for we have positive evidence on all railroads that the flanges of railway wheels cut away the head of the outside rail, while the evidence is plain that there is no flange wear against the head of the inner rail.

The writer will have to admit that he cannot offer any scientific formulae that will satisfactorily explain actual curve resistance as we find it in practice. On the other hand he has never seen in print a statement of what he considers the real reason why all outer wheels of railway equipment exert a pressure against the outer rail on a curve. The reason that this is true regardless of degree of curve, speed of train or elevation of track (within reasonable limits) is that *a revolving cylinder tends to rotate in a straight line perpendicular to the axis of rotation.* If our wheels were manufactured with flat treads and vertical flanges on account of their being fastened rigidly to the axle we would in practice have our equipment carried on revolving cylinders with a portion of the cylinder cut away, and if this were the case I believe it would be possible to devise formulae that would correctly represent the actual amount of curve resistance.

It is generally conceded that curve resistance amounts to approximately 0.8 lb. per ton of load per degree of curvature. A great many believe that the major portion of this resistance consists in the skidding of the wheels in a longitudinal direction on account of the difference in lengths of the inner and outer rails. If this skidding actually took place, (the difference in length between the inner and outer rails on a 1-deg. curve for a distance of 100 ft. being approximately one inch), and assuming a large coefficient of friction for a moving body, say 22 per cent, a little calculation will prove that the work done in this skidding would only account for one-fourth of the 0.8 lb. mentioned above.

In order to check the writer's ideas he had a long 8-deg. 10-min. curve carefully measured. He then calculated what the diameter of the inner and outer wheels would be to make them directly proportional to the length of the two

*Abstracted from a paper in Bulletin No. 207 of the American Railway Engineering Association.

rails on this curve. These wheels were then turned accordingly, with a standard flange but with a flat tread; they were put under a steel flat car 36 ft. 10 in. long with a tare weight of 31,200 lb. and a live load of 99,000 lb. of steel rails. The first experiments made with this car were with the idea of testing the tractive force necessary to move it. It was apparent from the start that the equipment of the dynamometer car used was not delicate enough to measure small pressures accurately. The writer, therefore, abandoned the idea of attempting to get a definite figure in pounds per ton with this machine, but the results prove conclusively what he expected, viz., that the resistance on the 8-deg. 10-min. curve was only 50 to 60 per cent of the resistance on straight track.

The next test consisted of pulling another flat car, similar in all details except that it had standard trucks which were in very good shape. The dynamometer car results indicated, as we expected, that the resistance on straight track was only 40 to 50 per cent of the resistance on the curve. The most important feature of these tests was the fact that the trucks with the special wheels never pressed against the head of either the inner or outer rails while going around the 8-deg. 10-min. curve but ran exactly as true as the ordinary truck runs on a straight track and this was true regardless of speeds from 5 to 25 miles per hour, thus proving, of fact, however, the writer is convinced that the outer leading wheels on a truck take a position with the flange against the rail head, and that there is absolutely *no backward skidding of the inner leading wheels of any railroad truck in rounding a curve. Any skidding that may take place in the wheels of the leading axle is equal and in a forward direction.* A very small amount of backward slip of the inner wheel axles 1 and 3 going north and 2 and 4 going south is indicated in column 4 where we know the taping was taken on a larger diameter than the one the wheels were rotating on. This, taken with the figures in column 6 for the inner wheels of the leading axles of the trucks, which indicate a positive forward slip of the inner wheel, (when we know that the diameter on which the wheels were rotating could not have been larger than the diameter on which measurements were made) would indicate that the outer wheel was pressed so hard against the outer rail that the resistance against free rotation was so great that the result is that both wheels were actually skidded a short distance forward.

By making a study of all the outer rear wheels of the trucks it is very plain to the writer, as observation and experiments proved, that these wheels press against the outer rail and ride on a larger diameter than the official taping indicates but not sufficient to overcome skidding entirely;

TABLE I

1 Axles numbered 1-2-3-4 from North to South Axles No.	2 Distance on rail measured in feet traveled by wheels making 70 complete revolutions		3 Seventy times circumference of wheels in feet taped in field close to flange		4 Difference between distance measured on rail and 70 times circumference		5 Seventy times circumference of wheels in feet as officially taped after test 1 in. from base of flange		6 Difference between distance measured on rail and 70 times official taping of circumference	
Car moving North	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner
No. 1	605.88	601.68	602.29	602.29	+3.58	—0.61	601.01	600.83	+4.87	+0.85
No. 2	605.58	601.39	605.21	605.21	+0.37	—3.82	604.11	604.11	+1.47	—2.72
No. 3	605.92	601.73	602.29	602.29	+3.63	—0.56	601.38	601.01	+4.54	+0.72
No. 4	605.46	601.27	603.02	603.02	+2.44	—1.75	602.11	602.29	+3.35	—1.02
Car moving South										
No. 1	604.67	600.48	602.29	602.29	+2.38	—1.81	601.01	600.83	+3.66	—0.35
No. 2	608.88	604.68	605.21	605.21	+3.67	—0.53	604.11	604.11	+4.77	+0.57
No. 3	604.63	600.43	602.29	602.29	+2.34	—1.86	601.38	601.01	+3.25	—0.58
No. 4	607.08	602.89	603.02	603.02	+4.06	—0.13	602.11	602.29	+4.97	+0.60

at least to the writer's mind, that the rectangular shape of the wheel-base, especially so for the short wheel-base of a freight truck, has very little or nothing to do with causing the pressure of the wheels against the outer rail.

The next test that was made was one to determine, if possible, which wheels of a railway car do the skidding and the amount thereof. The writer has always been of the opinion that, on account of the extra horizontal pressure of the leading wheel of a truck against the outside rail, unless the vertical pressure on the inner rail was largely in excess of the vertical pressure on the outer rail, there would be very little or no skidding of the outer front wheel of the truck. The writer is convinced that this is true; also that there is no backward skidding of the inner front wheel which was more than was at first expected.

Some tests were made with a view of attempting to measure the amount of skidding of the wheels. A flat car with a gross weight of 129,100 lb. was run a distance of about 600 ft. in both directions over the above mentioned 8-deg. 10-min. curve at a speed of about four miles an hour. The revolutions on all the wheels were counted and measurements taken to show how far they would have to go to complete 70 revolutions. The table gives the results of these measurements.

We started out with the idea that there would be very little or no skidding of the outside leading wheels of any truck. If one will note, however, the outer wheels on axles No. 1 and 3, columns 4 and 6 on the car going north and also the outside wheels on axles 2 and 4 in columns 4 and 6 when the car was going south, he would be apt to say that these were the wheels that did the skidding. As a matter that is, there is some skidding of the inner wheel of the rear axle of a truck although the amount is rather small.

The writer's object in giving this matter to the public is to revive interest in this subject, bring out discussion, and if possible get more information, as it is only when the actual causes of trouble are really understood that the proper remedies can be applied. The second reason is to call the attention of operating officers of railways to the fact that it is a waste of fuel to haul cars over railways, the wheels of which are not running true.

The writer is convinced that the greater portion of the curve resistance is caused by the pressure of the flange against a single rail. Therefore, the mating of wheels or the setting up of trucks not properly true that cause the flange on one wheel of an axle to wear sharp is not only shortening the life of the wheel but is costing the company considerably more money to acquire this undesirable result. The following is a summary of the writer's conclusions:

1. All outer wheels of railway equipment exert a pressure against the outer rail when rounding a curve.
2. The cause of this pressure is the tendency of a cylindrical body to rotate in a straight line at right angles to the axis of rotation.
3. There is never any skidding of either wheels of the leading axle of a truck unless it is a forward skidding of both wheels caused by the resistance to rotation being great enough to cause a slight retardation to rotation which results in an apparent forward skidding.
4. There is no skidding of the outer wheel of a rear axle; in general, any skidding that does take place is on the inner wheel of the rear axle.

The Fourth Loan Is Double the Third.

Notable Stationary Installation of Pulverized Coal

Tests at Milwaukee Show Remarkable Efficiency and Demonstrate Requirements for Burning Powdered Fuel

AT THE MEETING held recently by the Fuel Conservation Section of the Railroad Administration to discuss fuel economy in railway stationary plants* a paper was read by John Anderson, chief engineer of power plants, Milwaukee Electric Railway & Light Company, Milwaukee, Wis., on the use of pulverized coal in stationary power plants, in which he described the equipment at the Oneida Street station of that company, and gave a report of a test recently made. This installation is noteworthy not only by reason of the high efficiency obtained, but also because of the fact that it has made clear some of the conditions necessary for the successful operation of boilers utilizing powdered fuel. An abstract of this paper with a brief report of the discussion follows:

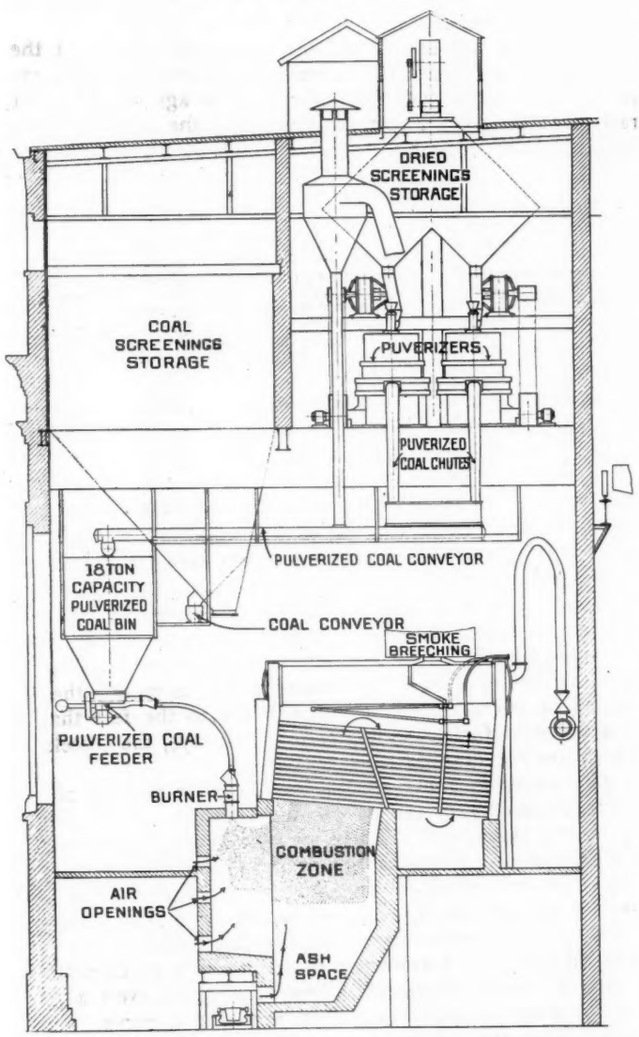


Diagram of the Power Plant Arranged to Burn Pulverized Coal

During the early part of 1918 the Milwaukee Electric Railway & Light Company, in an effort to determine the advisability of utilizing pulverized fuel in its plants, decided upon a trial installation at the Oneida Street station. The necessary equipment for preparing and feeding the coal was installed and the boiler was placed in service during the early part of May. From that time until early in August, when the installation was finally proven successful, changes were made to eliminate undesirable conditions encountered during the preliminary operation.

Equipment

The drying and pulverizing equipment, installed in a room located near the plant coal bunkers, consists of one 15-ton per hour indirect fired dryer, and one 4-ton per hour pulverizer. From one of the coal bunkers the fuel as delivered to the plant is carried to the dryer supply bin by means of a screw conveyor and a bucket elevator. From this supply bin the coal is drawn into the drying cylinder by means of another screw. It is carried through the dryer by means of gravity and discharged into an elevator which carries the dried fuel to the pulverizer supply bin. In the dryer the moisture is reduced from 11 per cent to 1 per cent at the rate of about 10 tons per hour.

The coal in passing to the pulverizer supply bin is run over a magnetic separator pulley, which removes any iron and steel which has been carried that far. From the bin last mentioned the fuel is fed to the pulverizer through a small screw conveyor located on the top of the mill.

The fuel after passing through the pulverizer is carried on by means of a screw conveyor to the pulverized fuel storage bin located in front of the boiler. All drives on the conveying and pulverizing equipment are so arranged that only the machinery which is in use will be operating.

The equipment for firing the fuel into the furnace consists of a blower and two screws, driven by variable speed motors. The screws located at the base of the powdered coal bin carry the coal at a uniform rate to the feeder pipes, where it is thoroughly mixed with air by means of agitator wheels attached to the end of the screw shafts. From the paddle wheel the fuel is carried into the furnace by the air blast supplied from the blower. The furnace is of the Dutch oven type to insure the proper flame travel, thus preventing destruction of the brick work.

Operation

When the boiler was first put into operation, a number of undesirable conditions resulted. An insufficient air supply caused high furnace temperatures resulting in fusion of the ash particles and a consequent accumulation of slag between the tubes, on the furnace walls and in the ash pit. The removal of the molten slag presented considerable difficulty. It was also found that the combustion chamber was of insufficient size. High gas velocities resulting from insufficient air in the chamber tended toward destruction of the refractory surfaces of the furnace.

A new furnace was therefore designed. The combustion chamber was enlarged and a regulated air supply was provided for by means of a number of auxiliary air openings equipped with dampers. The accumulation of slag in the pit was prevented by raising the point of admission of the fuel into the furnace. As a result the flame path has been raised above the base of the pit; hence particles of ash dropping from the flame are not fused. The ash can therefore be drawn from the pit in the form of a powder and small slugs of slag. Analysis has shown that the ash contains practically no carbon.

*See *Railway Age* of September 13, 1918, page 517.

Tests

Having established satisfactory furnace operating conditions, a series of efficiency and capacity tests were conducted preliminary to proving the contract guarantees. The brick work was then given a thorough trial by carrying the boiler at a continuous rating of 180 per cent over a period of several days. On August 12 and 13 a final efficiency test, the results of which are published herewith, was run.

The boiler is an Edge Moor, three pass water tube boiler, equipped with a superheater. The coal feeders and burners are of the Lopulco type, manufactured by the Locomotive Pulverized Fuel Company, New York. Because of the nature of the equipment the coal could not be weighed on the firing floor. To arrive at exact coal figures, it was necessary to run all drying and pulverizing equipment free of coal. The fuel in the pulverized storage bin was run to as low a level as possible and a measurement taken to determine the cubical contents of the powdered coal on hand at the start. Coal for the test run was then weighed into the system at the moist coal bunker. At the close of the run the starting conditions, so far as was possible, were again established. The samples for analysis, upon which the test results are based, were taken at the moist coal bunker as the coal was weighed in. Moisture samples were also taken at the pulverizer feeder and the burners. All analyses were made at the laboratories of the Milwaukee Electric Railway & Light Company.

The feed water used during the test was weighed on the standard tank scales at 2,000 lb. capacity each. All temperatures and pressures were taken with instruments which, previous to the test, had been checked against standard instruments. Flues were blown five times during the 24 hours. Flue gas analyses were determined by means of an Orsat apparatus. Throughout the test very uniform conditions were maintained. The speed of the coal feeders and the drafts carried were held constant. The feed pump speed had to vary somewhat from time to time. The variation in the rate of evaporation was, however, due to slight changes in the quality of coal during the test run.

LOG OF TEST—PULVERIZED FUEL BURNING STATIONARY BOILER
Date, August 12-13, 1918

Make of boiler			Edge Moor
Rated horsepower			468
Heating surface			4,685 sq. ft.
Time fired or test started			11:15 a. m., 8/12/18
Time fire out or test finished			11:15 a. m., 8/13/18
Duration of test			24 hr.
	Maximum	Minimum	Average
Temperature of boiler room (deg. Fahr.)	99	85	93.3
Temperature of feed water (deg. Fahr.)	168	135	157.2
Temperature of steam (deg. Fahr.)	477	427	448.7
Barometer inches of mercury	29.35	29.20	29.25
Temperature of flue gases (deg. Fahr.)	515	455	495.3
Average boiler pressure			167.0 lb.
Atmospheric pressure			14.4 lb.
Temperature of steam			373.8 Deg. F.
Superheat			74.9 Deg. F.
Safety valve set for			175 lb.
Fuel fired per hr.			1,990.6 lb.
Total fuel			47,775 lb.
Total water			393,168 lb.
Water apparently evaporated per hr.			16,392.0 lb.
Water apparently evaporated per lb. of coal			8.23 lb.
Factor of evaporation			1.1502
Water evaporated from and at 212 deg. F. per lb. of coal			9.47 lb.
	Maximum	Minimum	Average
Carbon dioxide (CO_2), per cent	15.4	12.2	13.85
Oxygen (O), per cent	5.6	3.2	4.38
Carbon monoxide (CO)			None
Fuel used			Bituminous screenings

Fuel analyses—

Amount of coal represented by each sample	No. 1 19,775 lb.	No. 2 20,000 lb.	No. 3 8,000 lb.	Average
Per cent of total	41.3	41.1	16.9	.....
Moisture (per cent)	10.3	11.0	9.7	10.49
Volatile (per cent)	33.81	36.96	38.77	35.96
Fixed carbon (per cent)	50.43	49.13	48.29	49.53
Ash (per cent)	14.36	13.91	12.94	13.93
Sulphur (per cent)	1.90	2.06	2.12	2.04
B. t. u., as received	10,600	10,763	11,263	10,779
B. t. u., dry	11,817	12,093	12,473	12.045

Vacuum in burner	.000 in.
Vacuum under primary arch	.000 in.
Vacuum in combustion chamber	.000 in.
Vacuum in first pass	.000 in.
Vacuum in second pass	.0057 in.
Vacuum in breeching	.09 in.
Feeder speed, r. p. m.	(No. 1), 53.6; (No. 2), 50.7
Coal per rev. of screw	.318 lb.
Accumulation of slag on tubes	None
Flues blown during test	5 times
Operation of furnace	Very satisfactory
Pulsation	None
Condition of smoke	Light
Heat effect on brick	None
Back lash of flame in burner	None
Pounds of steam per hr.	1,639.03
Pounds of steam per hr. from and at 212 deg. Fahr.	18,842.6
Horsepower	546.2
Per cent of rating	116.7
Boiler efficiency	85.22 per cent
Memoranda—Fuel preparation deduction:	
Coal used in dryer	1,140 lb.
Motor operation	449.3 kw. hr.
Coal equivalent at 3 lb. per kw. hr.	1,348 lb.
Total deduction	2,488 lb.
Resulting net efficiency	81 per cent

No deduction made for stand by losses in dryer.

Pulverized Coal vs. Mechanical Stokers

1. Under this heading fuel preparation costs will first be considered. In the case of powdered coal this can be classed under three general divisions:

(a) The cost of crushing the coal. This expense is the same for pulverized coal equipment as for stokers.

(b) The cost of drying and pulverizing the coal. Although no cost records are available at present, it is estimated that 32 cents per ton will cover this preparation cost on a 200-ton per 24 hour plant using bituminous coal containing about 12 per cent moisture.

(c) The maintenance costs of the drying and pulverizing plant. This unit has not been determined from actual experience, however, it is estimated that 3 cents per ton will cover the maintenance. In stoker practice the maintenance cost per ton of fuel fired is close to 5 cents per ton.

Summarizing the above facts it is evident that, with fuel at five dollars per ton, the gross efficiency shown by the pulverized fuel boilers will have to exceed that shown by the mechanical stoker fired boilers by six per cent in order to offset coal preparation costs. A six per cent deduction from a gross efficiency of 85.22 per cent results in a net efficiency of 79.22 per cent for the powdered coal burner. In stoker practice the maximum attainable gross efficiency at any of our plants has been 80.54 per cent. Deducting the 2.5 per cent for auxiliary uses, the resulting net efficiency is 78.04 per cent, which is lower by 1.18 per cent than the figure obtained in pulverized fuel practice.

Other advantages resulting from the use of pulverized fuel are summarized herewith:

2. Continuous boiler operation at a uniform rating as well as a constant efficiency is made possible. At no time is there a loss in capacity due to the clinkering of coal on the grates or the cleaning of fires.

3. Heavy overloads can be taken on or dropped off in a very brief time through adjustment of the coal feeders and the furnace drafts.

4. From 97 per cent to 98 per cent of the combustible in the coal is utilized, regardless of the quality of the fuel.

5. The ash handling costs are reduced to a minimum due to the reduced volume.

6. The banking conditions when operating with pulverized fuel are somewhat different from those obtained in stoker practice. By stopping the fuel supply and closing up all dampers and auxiliary air inlets a boiler can be held up to pressure for about 10 hours. The furnace brick work having been heated to incandescence during operation gives off a radiant heat which is absorbed by the boiler rather than being sent out through the stack. The ease of controlling the fuel, feed and drafts, the ability to take on heavy overloads in a brief time, the thorough combustion of the coal and the uniform high efficiency obtainable under normal operation, make pulverized coal a most satisfactory form of fuel for central station uses.

The full story of maintenance expense is only partly known as yet. Indications are that no unusual difficulties will be met. The cost of fuel preparation and labor for operating

The Huns Are Still in France.

a boiler room fully equipped with pulverized coal burning boilers will be a question for the engineer to decide for himself according to his particular conditions. If properly installed with respect to capacity of storage, size of dryer and pulverizers, and on a sufficient number of boilers to properly and fully employ the minimum number of men, the pulverized fuel installation will undoubtedly be more advantageous. The main item that must be borne in mind by engineers is that the ease with which a high efficiency is obtained and the constant nature of that efficiency, as compared to the lack of constancy of efficiency in a stoker fired boiler, unless very closely supervised, is the one factor about the burning of pulverized fuel which justifies its use. There is no doubt that with a well equipped plant burning pulverized fuel, having all the necessary recording and indicating instruments to guide the operators in maintaining the proper conditions, a lower cost of generating steam will be possible than has heretofore been the case in any type of equipment.

Discussion

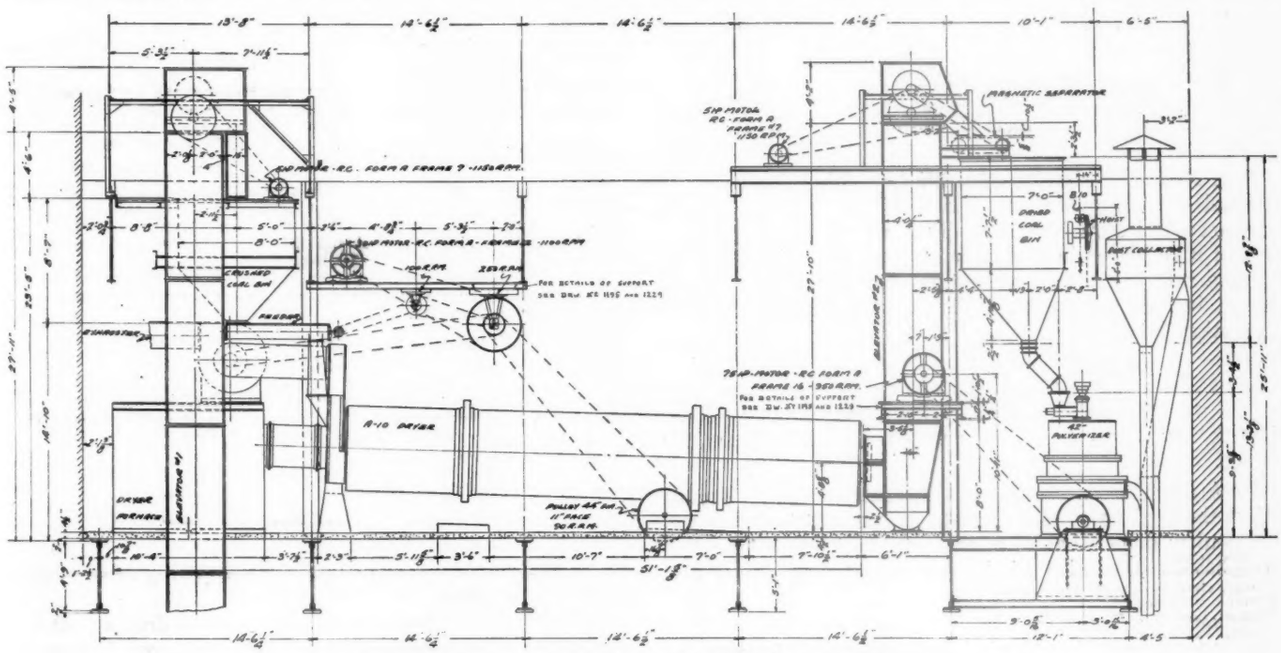
Attention was called to the liberal deduction made for coal used in operating the auxiliaries. In computing the relative economy of boilers fired by stokers and by pulverized coal, six per cent of the fuel burned under the boilers was allowed for preparation. The proportion actually consumed for this purpose as shown by the log was 4.22 per cent. The drier and pulverizer were operated intermittently and therefore inefficiently and no deductions were made for standby losses. The drier was designed to handle 15 tons an hour and the pulverizer 4 tons an hour, while the actual hourly consumption was only 1 ton. With a plant in full operation this loss should not amount to more than 2.5 or 3 per cent. The coal allowed for operating the stoker and auxiliaries is assumed to be 2.5 per cent, whereas it usually ranges between 3 and 5 per cent. The efficiency of stoker fired boilers varies due to variations in the size of coal, while pulverized coal maintains a constant economy. In this test three different kinds of coal were used. Mr. Anderson stated that in his opinion pulverized coal in regular operation would probably show a saving of 10 per cent over stokers.

As an instance of the results secured by banking fires, it was stated that on one occasion the fuel was shut off at 11 p. m. with 175 lb. pressure on the boiler and in the morning the pressure was 165 lb. and the brick work was still hot enough to ignite the coal when the blower was turned on. These remarkable results are due to the fact that the damper can be closed tightly and there is no heat lost up the stack.

In order to secure the best results the pulverizing and drying equipment should be of sufficient capacity to enable one shift of workers to prepare all the coal required for the entire day so this operation may be kept in the hands of one set of men.

Mr. Anderson stated that in his opinion pulverized coal would be the ideal fuel for central station use as it provided the needed capacity for overloads and made it easy to bank the fires. However, it would require a plant of considerable size to show economy.

The furnace in which the powdered coal was burned was 12 ft. high, 10 ft. wide and 15 ft. from front to back. This gave a volume of slightly less than one cubic foot per pound of coal burned per hour, or approximately four cubic feet per horsepower. The draft in the furnace was very low. Stationary boilers equipped with stokers require a vacuum of about 0.4 in. of water over the fire and nearly 1 in. at the damper. With the pulverized coal when operating with a vacuum of 0.2 inch at the damper slag and honeycomb gathered on the flues. The trouble was eliminated when the draft was reduced to approximately 0.1 in. at the breeching. The air was not all fed in through the burner, but a large proportion was drawn in through a number of openings about 10 in. in diameter in the front of the furnace.



Arrangement of the Drying and Pulverizing Machinery

A Turn of the Wheel.—Disclosures of the presence of Americans engaged in building railroads in Italy, says the Omaha Bee, suggests another of the anomalies of war. In days not so very far gone, we have been accustomed to watch "Tony the Wop" tamp the ties and maul the spikes on American railroads. He has constructed the roadbed and laid the rails, and afterwards has manned the handcar and attended to the manifold duties of the humble section hand. Now he is a soldier, fighting the Kaiser for the preservation of his home land, and the young American is doing for Italy the service that Tony and his kind did for America.

Liberty Bonds Will Help Push Them Out.

Orders of Regional Directors

SOLICITATION OF RAILROAD EMPLOYEES.—The United States Employment Service, recruiting labor for War Industries, has issued instructions that no railroad employees be solicited.

Dining Car Rates for Trainmen and Pullman Employees.—The Railroad Administration has approved a uniform charge of half rate for trainmen and Pullman employees en route in dining cars, except that a fifty cent rate shall be effective on trains where $1.25 is charged for dinner. This applies only to those employees who are actually engaged in service on the train to which dining car serving the meal is attached.

Shipments of Grain Via New Orleans.—The Northwestern regional director announces that hereafter United States war department transportation orders will be required on bulk grain destined to New Orleans, La., or via New Orleans for points abroad, when shipped for account of the war department.

Cost of Handling Material and Stores.—The southern regional director has asked the railroads to advise promptly the cost of purchasing, handling and storing material in and distributing it from the company storehouses, including the pay of officers and employees in the purchasing and other stores departments, and their traveling, office, and other expenses for the six months ending June 30, 1918. The roads are also asked to furnish a statement of the issues of material and stores for the six months ending June 30, 1918, by months.

Fire Protection During the Winter.—The Southwestern regional director quotes Bulletin 3 of the manager of the Insurance and Fire Protection Section and requests that a copy of it be placed in the hands of every officer in charge of railroad property and its protection from fire hazards down to and including foremen. The bulletin contains detailed precautions to be observed during the winter to prevent fire losses.

Must Notify Boards if Exempted Men Quit.—Local draft boards must be notified when railroad men given deferred classification on account of their employment, terminate their service.

Stock Car Loading.—The Northwestern regional director orders the loading of stock cars to be confined to live stock, live poultry or perishable freight, until November 15. Any road having a surplus of this equipment will report that fact to the regional director.

Economy in Passenger Train Heating.—The manager of the Fuel Conservation Section has addressed the regional directors as follows, calling attention to the possibilities in affecting economies in passenger train heating:

The time is at hand when passenger trains will be heated. Much coal can be saved by attention to the suggestions given below. Will you kindly ask the federal managers or the chief operating officials of the roads in your territory to bring these suggestions to the attention of all passenger trainmen and to such others as are concerned.

1. The temperature in cars should be maintained at about 65 deg. It should never be more than 70 deg. Thermometers should be installed in all cars. Where thermostats are used have them tested for accuracy.

2. Control the temperature by the steam valve or by the damper where stoves are used—not by opening doors and windows. No man does this in his home; why do it on trains? In live-steam systems regulate the pressure at the locomotive.

3. Do not allow drip valves to run too wide open. Do not allow too much steam to escape from the rear-end hose.

4. Thoroughly insulate all steam heat pipes on cars, tenders and locomotives; and maintain all valves and connections so as to prevent steam leaks. The most serious losses are by radiation and by leakage.

5. Keep stoves, stove dampers and all other heating equipment in good order.

6. In terminal yards keep cars heated only enough to prevent the freezing of water pipes. Do not bring them up to final temperature too long in advance of their use, and do not overheat them for purposes of car cleaning.

7. By notices in cars and stations ask the public to co-operate and help to save fuel which is greatly needed for war purposes.

Execution of Contracts and Agreements During Federal Control.—The regional directors have received the following instructions from the Division of Law, United States Railroad Administration:

FORM OF SIGNATURE

1. All contracts or agreements on behalf of the United States Railroad Administration shall be executed in the name of W. G. McAdoo, director general of railroads, in the following form:

"W. G. McAdoo, Director General of Railroads.
"By ..... (Name of Executing Officer, ... Title).
"..... Railroad."

UNIFORMITY OF EXECUTION

2. All contracts or agreements of a general nature should be executed by the federal manager, or in the name of the federal manager by his assistant.

Federal managers may continue or establish practices whereby certain officers or agents under their jurisdiction are authorized within specific limitations to execute contracts or agreements relating to their particular departments, the execution to be in the name of the director general of railroads, by such authorized officer or agent, in the form prescribed in the first section hereof.

Bills of lading, live stock contracts and other similar local agreements may be executed by agents as heretofore, printing or stamping required by instructions issued July 16, 1918, operating to constitute them contracts with the director general of railroads.

CONTRACTS RELATING JOINTLY TO CORPORATE AND FEDERAL INTERESTS

3. Contracts or agreements of a permanent nature, involving mutual covenants or affecting the interests or property rights of the corporation, which will or may extend beyond federal control, should be executed jointly on behalf of the corporation and the director general of railroads. Where such contract or agreements are principally or solely in the interest of the corporation, they may be executed by the corporation, with an endorsement signifying the acquiescence of the director general of railroads during the period of federal control, in the following form:

"The consent of the director general of railroads is hereby given to the execution and delivery of this instrument.
"W. G. McAdoo, Director General of Railroads,
"By ..... (Name) ....., Federal Manager.
"..... (Name of Railroad) ..... Railroad."

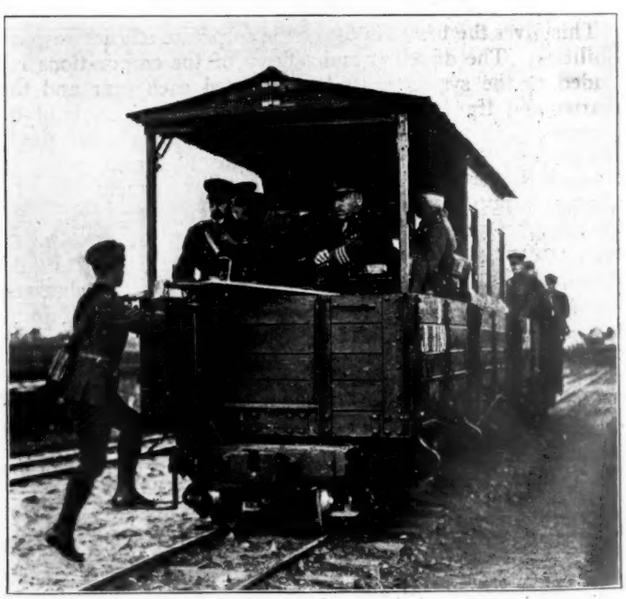
Where the corporation declines to become a party to contracts or agreements involving mutual interests or covenants, such execution may be made in the name of the director general of railroads, limited to the period of federal control. This policy should be followed only where absolutely essential.

4. Where additions, betterments or road extensions or equipment are made or provided by the director general, the contracts in respect thereof shall be made in his name.

LIMITATION TO PERIOD OF FEDERAL CONTROL

5. All contracts executed on behalf of the director general of railroads except those containing covenants specifically providing otherwise, shall contain the following: "This agreement of W. G. McAdoo, director general of railroads, shall not extend beyond the period of federal control of railroads, and unless sooner terminated, shall as to him, terminate at the end of such federal control."

Buy Bonds to Your UTMOST



King George Visits the Front on a Light Railway

Functions of Railway Corporate Organizations

Their Officials and Important Work as Illustrated by Pennsylvania System

INQUIRIES HAVE BEEN MADE from time to time as to the nature and importance of the duties performed by the corporate officers of railroads whose operating properties are under government control. These questions may, perhaps, be most clearly answered by taking as a concrete example one of the larger railroad systems. The Pennsylvania lends itself to this purpose well, owing to its size and prominence, and to its long continued policy of publicity in regard to its operations and activities.

The Pennsylvania System is over 70 years old, and full reports of its corporate activities and investments in other companies have been published so long that it is not difficult to analyze the situation. It consists of over 180 active and inactive railroad and other corporations with over $2,000,000,000 of outstanding capital issues. This represents the cost of plant and appurtenances of the largest standard railroad freight and passenger carrying system of the United States—one which, in 1917, had a ton mileage which exceeded by over 60 per cent the combined annual ton mileage before the war of all the railroads in Great Britain and France.

The total treasury investments of the system companies in stock and bonds of other railroad companies is somewhat more than $500,000,000. These 180 comporations embrace what were originally over 600 separate corporations, but which have been reduced by merger, consolidation, sale, or otherwise, to the present number. The stock and bondholders of the corporations included in the Pennsylvania System must be in the neighborhood of 200,000 individuals and corporations, holding about one and a half billions of these securities. Anything that might tend to weaken the system, change its well established financial policy, fail to protect the interests of its stock and bondholders, impair the standard or efficiency of its transportation service, or permanently disrupt its management and organization would be a national calamity.

Duties of Corporate Officers

This gives the first glimpse of the corporate officers' responsibilities. The directors and officers of the corporations included in the system must be re-elected each year and the charter and franchise powers preserved. The records of its directors and stockholders, its charters, franchises, deeds evidencing property ownership, agreements, leases, plans of the railroad and all of its structures, etc., evidencing its contractual relations with the states, municipalities and other corporations and individuals, are essential to the United States Railroad Administration, and these contracts and evidences of ownership and operating rights must be observed during federal control. This means many thousands of documents that must be kept for use by the corporate officers and available to the federal control officers.

The capital stock and bonds of the corporation must be issued and transferred; its mortgages and other indebtedness, and the liens affecting its road and equipment must be looked after, and its investments must be safeguarded. If for no other reason, this must be done because the government is using the borrowing powers, and indeed the financial resources of the railroad corporations, by compelling them to borrow the money and provide the securities to carry on the work of additions to and betterments of the railroad and equipment taken over by the government.

From the civil and mechanical engineering standpoint, the surveys, plans and estimates and authorizations for new road and equipment work desired by the government must be examined, and with the requisitions for additional land and right of way required therefor, must be either consented to or objected to by the corporation. For the Pennsylvania System this means thousands of separate items of new improvement work, including the acquisition of real estate and equipment, running from $110,000,000 to $150,000,000 per annum, which is none too much at present high prices for a system that doubles its traffic about every 12 years and serves 13 states in the most expensive and populous part of the country.

Close Relations with Federal Management

As such new improvement work proceeds, the directors must see that the corporate officers periodically inspect it, and that it is completed for the lowest possible cost and will be adapted to the permanent transportation necessities of the corporation; similarly, that maintenance, renewal and replacement work on 25,000 miles of track and on the stations, shops, bridges and other structures is properly carried out, and that the standards of the Pennsylvania System shall not be allowed to deteriorate, or if they are that claims shall be made against the United States.

Close relations with the federal management must be maintained and the observance of the government contract, when executed, will affect all of the corporate departments and will warrant the closest co-operation between the operating and corporate organizations, and with the Railroad Central Administration at Washington to agree upon the interpretation and carry out the provisions and principles of the contract, which are not detailed but must be settled by administration rulings. Co-operative action must also exist to prevent unnecessary outlays or expenditures, and to insure to the government the greatest help from the experienced officers of the corporation, as well as from the railroad officers formerly with the company and now with the government.

The Pennsylvania System should receive about $87,000,000 annually of standard compensation under the government contract, in addition to about $30,000,000 of other income from investments, the corporate officers must arrange for its distribution to the companies interested, and from them to their stock and bondholders, and others, in payment of interest, dividends, taxes, etc. This will vary each quarter because of additional capital expenditures, etc. The payment of these fixed and net lease-hold rentals of railroad and miscellaneous properties and facilities, as well as the payment of interest on bonds and dividends on stocks of all the companies must be looked after, as each set of stockholders will be alert to their own interests. Probably 750,000 checks will be issued per annum.

Elaborate Accounting and Auditing System Required

The accounting and auditing system required for each corporation covering all the above-mentioned transactions, including the costs and results of the improvement, maintenance and use of the company's property and equipment while under government control, and the reports required by federal and state laws must also be continued. Federal control is limited by law to 21 months following the declaration of peace and this means that the company must join in the execution of all important contracts, leases and arrangements, or otherwise all terminate with federal control and confusion would reign.

It is hardly necessary to say that the system corporations must have a very complete and experienced legal organization covering their activities with each other and with their stock and bondholders, and the relations with the government, and

to attend to corporate litigation which is bound to arise.

Summed up, an active Executive, Legal, Financial, Accounting, Secretarial and Real Estate and Engineering organization will be kept extremely busy, and experienced men that know the Pennsylvania System must be in command.

The insurance and inspection of properties not taken over by the government, as well as those carried as "Miscellaneous Rents" and used by the government in connection with the railroad system, such as detached wharves, piers, docks, etc., like those rented from the cities of New York, Baltimore, etc., must continue.

Railroad valuation is still actively proceeding so far as inventories and physical work are concerned, and later on it will be incumbent upon the corporation officers to be prepared to insist upon a fair valuation of their properties.

So long as the federal laws provide for the termination of federal control within a relatively short period after the end of the war experienced traffic men in the service of the corporation must keep acquainted with changes in rates and traffic and in touch with commercial demands, so that when federal control terminates the traffic department will be prepared to resume business on lines that will meet commercial necessities which the war has created.

Management of Properties Not Under Government Control

An examination of the Pennsylvania System as disclosed by the various manuals, reports, etc., shows that it has a number of corporations that have not been taken over by the government, and the corporate organization will continue to be responsible for their operation. The system comprises about 95 railroads, but in addition there are 5 bridge and ferry companies and 44 miscellaneous companies covering water supply, terminals, warehouse and real estate corporations requisite for present use and development of the railroad system, in all about 144 active companies. There are also several other inactive or unimportant companies. The total capitalization of the companies not taken over by the government must be about $50,000,000. The corporate officers of the Pennsylvania System must also supervise large holdings of property not immediately used for railroad purposes, such as fuel lands and real estate for future railroad and terminal development. In addition, there are various employees' funds for savings, pensions and relief purposes and other guaranties and liabilities that must be managed, running into several millions. The Pennsylvania's corporation directors and officers have a most extensive responsibility; and in meeting it they are without the assistance of the large departments manned by many able officers and experienced employees taken over under federal control to operate the railroad properties.

Officers of Pennsylvania's Corporate Organization

The corporate organization appointed by the board of directors is relatively simple, its chief officers being:

President, Samuel Rea (as chief executive of the entire System east and west of Pittsburgh and Erie).

Vice-Presidents, Geo. D. Dixon, Henry Tatnall (who also acts as treasurer), W. H. Myers, A. J. County, (who also acts as controller).

Assistant to president, W. A. Patton. Assistant to president and engineer in charge of inspection of maintenance of roadbed, structures and equipment, J. G. Rodgers.

Corporate engineer, to inspect plans, estimates of new construction and the work as it progresses, H. C. Booz.

General Real Estate Agent, T. W. Hulme.

General Counsel, F. I. Gowen.

Secretary, Lewis Neilson.

This organization acts not only for the Pennsylvania Railroad Company, but also for all of its corporations east of Pittsburgh and Erie.

For the Western Lines, including the Pennsylvania Company, the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad Company, and the other corporations west of Pittsburgh, the following are the chief corporate officers, assisting President Rea:

Senior vice-president, J. J. Turner.

Vice-President and comptroller, E. B. Taylor.

Vice-President and engineer, Benj. McKeen.

Treasurer, T. H. B. McKnight.

General counsel, C. B. Heiserman.

Secretary, S. H. Church.

This is the outline of the $2,000,000,000 Pennsylvania System corporate organization and the general scope of its most important work. Similar studies of other corporate organizations like those of the New York Central, Union Pacific, Atlantic Coast Line, Southern Railway, etc., will find a similar necessity for an experienced corporate staff.

The railroads of the country, as a whole, represent a capitalization of approximately $18,000,000,000. The actual investment in their road and equipment probably exceeds $20,000,000,000. They have in the neighborhood of 600,000 immediate stockholders, but as many of the stockholders are institutions, such as insurance companies, trust companies, savings funds, charities, and endownment funds of various kinds, it has been estimated that upward of 40,000,000 people have a direct financial interest in the continued solvency and prosperity of the railroads. The safeguarding of such tremendous interests is a responsibility of the most serious and extensive character, demanding men of the best attainments.

Co-operation of Corporate and Federal Officers Essential

The co-operation of the corporate officers is essential to federal railroad operation and the carrying out of railroad improvements and extensions, and their financing. The experience of the directors and corporate organizations can be obtained for the benefit of the country. The same ability which made their corporations successful can perform a great deal of constructive work that should be of assistance in winning the war. These small but important groups of experienced men have a reserve force that should be called into active national work to a larger extent and until their service to the country and their record for both patriotic effort and economical and efficient transportation service is surpassed, they have no reason to feel that any criticism can disparage that record.

Corporate officers realize that the war has deeply affected other persons as well as themselves. They should continue to take a wholesome interest in all railroad and public affairs where their advice and experience will be of the greatest value. The public does not forget that no more prompt or generous response was made to the country when we entered the war than the unanimous action of the representatives of eighteen billion dollars of railroad property, binding themselves to serve the country and sinking their individual and competitive interests so that cantonments might be built and troops and war traffic might have the right of way. That the Railroads' War Board gave an exhibition of great skill in furnishing efficient and economical transportation is evidenced by the fact that the effect of the measures which it put into service are yet felt and the record it made has not so far been surpassed. When the relations of the corporations with the government are settled by contract the corporate officials can perform a most important national service by bringing their best judgment to bear on the form of government relations with the railroads which will be established after the war. The officers of the railways in the service of the government will not be in a position probably to take an active part in the consideration of this important question.

Will Railroads Experience a Shortage of Engineers?

A Discussion of This Subject Based on Data Secured From Railroads and Technical Schools

NO FACT HAS BEEN DEMONSTRATED more conclusively by the war than the necessity for engineering talent, not only in the conduct of actual warfare, but also in the intensive prosecution of industrial and construction activities incident thereto. So great has been the demand both for experienced engineers and for young men possessed of technical training that there are not enough trained and experienced men available for all requirements. Recognizing the seriousness of this situation, the Engineering Council, an advisory body formed by the four leading national associations of engineers and a number of local associations, presented addresses last spring to the secretaries of war and navy and also to the provost marshal general and members of the senate committees on naval and military affairs, calling attention to the necessity for these men in various technical activities and to the unfortunate waste of such talent resulting from the induction of men into the fighting forces without regard to their qualifications for special duties.

This condition received partial recognition by the United States Army at that time insofar as it concerned engineering students through arrangements to assign a portion of them to the Engineer Reserve, subject to special call. The government also arranged for a special branch of the United States Employment Bureau for recruiting engineers for technical positions and since the passage of the second draft law arrangements have been made by the war department for the enrollment of students as enlisted men undergoing special training.

Under such circumstances it is to be expected that the engineering departments of railroads will not only suffer serious losses in personnel, but will also experience a lack of high grade material to fill the many vacancies that are occurring. Because this is a situation of no small concern, particularly from the standpoint of the possible influence on the progress of construction and maintenance work, inquiries were made of the chief engineers of a number of representative railroads in various parts of the country as to the adequacy of their present forces, the difficulty of filling vacancies and the practicability of certain suggestions made to relieve the situation. Inquiries were also addressed to the heads of ten engineering schools with a view to securing data on the supply of technically-trained men in last year's classes.

Work Is Not Being Delayed

Most roads report an adequate force to conduct the work under way, a few indicate shortages of 5 to 10 per cent and one a deficiency of 30 per cent. Another road calls attention to the fact that it has been able to fill the gaps in its construction and maintenance organizations with men released from its valuation department through the completion of the major portion of the work. Still another road has a sufficient force in all branches of the departments except the valuation work. It is entirely possible that these reports are more optimistic than would be the case if work was not being delayed by other causes than shortages of engineers. In other words, the shortage in the technical forces would be experienced to a higher degree if the supply of labor and materials was adequate for the prosecution of the season's program in the fullest measure.

The greatest shortage is in the supply of men in the lower positions, such as rodmen, draftsmen, instrumentmen, inspectors and all grades up to assistant engineer. There is a well defined lack of applicants for positions of these grades. As the chief engineer of one road explains the situation, "about 75 per cent of the applicants may be placed in the following classes; first, the young graduates who are just out of school and who have little or no practical experience; second, the fellow who has been out of school for a number of years but who has not made a success of his profession." Other roads complain that very few of the applications they receive from recent graduates are from the high grade men of the classes.

There is a very good reason for this condition. The attendance at the technical schools interrogated was from 17 to 40 per cent lower last year than in previous years, while the number of graduates in June of this year varied from 42 to 98 per cent of the number in former years, the average being about 70 per cent. But these figures alone do not give an adequate idea of the shortage, since a very large proportion of the men graduating were definitely engaged for some form of military or civil employment some time in advance of the date of graduation. Enlistment in the Engineer Reserve accounted for from 10 to over 50 per cent of the graduates, and large numbers left school before the date of commencement. The number looking for positions at the time of graduation was practically nil, one school reporting that the only ones so situated were two or three foreigners who graduated during the year.

The shortage of men for minor positions can also be explained in another way. Men of this grade are available for and attracted by the large number of moderate salary positions that are now available in the many construction and industrial activities which require some technical training but only a limited amount of experience. On the other hand, technical positions of the higher grade, created as a result of the war, as a rule demand special experience or training for a special purpose and not so many of the higher engineering officers of railroads are especially fitted for them, although a great many railway construction men have earned enviable reputations for the success which they have secured in construction work at the cantonments, shipyards and other emergency building projects. The younger men, also, have been subject to the draft law and this has had no little bearing on the situation.

Higher Positions Filled by Promotion

It is true that the railroads have lost a considerable number of men occupying the more important engineering positions but not in like proportion with the vacancies occurring among the lower ranks. The single exception to this is one road in the Middle West which reported the greatest shortage among resident engineers, assistant engineers of maintenance of way and designing engineers. These might be classed as intermediate positions. However, almost without exception the railroads are filling these positions by promotion from the lower ranks and while most of the roads admit that this has involved the use of men with less experience as compared to the custom of previous years, there is no indication that this has resulted in any marked decrease in the efficiency with which the work is conducted. In filling the more numerous positions this has resulted in rather rapid promotion for some of the men. For instance one road reports that men with technical training have been promoted to the position of assistant supervisor after about three months' experience when under normal conditions this

position would not be attained short of about three years' service.

The influence of valuation work on the supply of men in the engineering department is dependent on three conditions, the present stage of the valuation work, the relative amount of construction work under way on the railroad and the relation between the amount of construction now in progress and that in former years. Obviously, valuation work is a much more formidable problem to the road that is compelled to start this work under the present conditions than to the road which is now bringing it to a close. The roads in the latter situation at the present time are most fortunate, since they are in a position to divert men to construction and maintenance activities as they are relieved from the appraisal work. The situation is the most serious on the small road or one of limited resources and which therefore requires but a small engineering staff to handle the amount of construction work done. On such a road the organization of a force to conduct valuation work presents a serious problem and for the same reason the discontinuation of this work would greatly relieve the situation. A special situation is presented by two western roads possessed with considerable staffs of efficient construction men, who had been engaged until recently in the building of various extensions and improvements. The completion of this work in one case and the necessity for a discontinuation of it in the other have made a large number of experienced men available for valuation work. In fact until recently this proved to be the only opportunity for retaining the men in service.

Considering the extent to which women have been employed in work entirely strange to them a year or two ago, it is rather remarkable that so few women are employed in other than purely clerical positions in the engineering departments of railroads. They have been utilized to a limited extent in drafting rooms as tracers and detailers with a few employed as computers. No specific data were obtained as to just why the number is so small. With prospects of increased limitation on man power, it will be imperative to employ men only in positions where they are positively essential. Positions in the drafting rooms not requiring an intimate knowledge of field methods or mathematical training, would seem to offer a favorable field for the employment of women.

The Situation in the Future

The most serious aspect of the situation as to the personnel of engineering forces lies in the fact that the most pronounced scarcity is in the lower ranks, i. e., the source from which the higher positions must be filled. Since experience is showing the necessity for employing men of limited training in minor positions a further scarcity of such men will make the situation increasingly severe. Lowering the limit of the draft age has placed under military control practically all of the young men available for the lowest engineering positions, while the technical schools have been taken over for the training of men for war service and will leave available for civilian duty only men who are physically unfit for even limited service positions and the few exempted on the grounds of dependency. The situation is one that concerns not alone the railroads but all undertakings involving the employment of technical men.

THE AMERICAN SUPPLY SERVICE reached a new high mark in September, overtopping its August record by 10 per cent, according to associated press despatches. American ports handled a daily average of 25,808 tons of freioght. There was also a gratifying increase in rolling stock, and there are now more than 1,000 American locomotives in operation in France, while the number of freight cars is more than 10,000. This rolling stock is all used in the great system of transporting men and supplies to the front.

Pennsylvania Lines Show Additional Improvement in L. C. L. Loading

THE EXCELLENT RESULTS achieved by the Pennsylvania Lines West in its campaign to promote the intensive utilization of car space were outlined in the *Railway Age* of January 25. Records for the loading of l. c. l freight this year are even better than those attained in 1917, which were discussed in the article referred to. In July, 1918, the Pennsylvania Lines west of Pittsburgh handled 23,856 cars of l. c. l freight with an average loading of 19,402 lb. per car for all Lines West, including the St. Louis system, and 19,920 lb. exclusive of it. In July, 1917, the Lines West exclusive of the St. Louis system, for which no records were kept, had an average loading of 17,833 lb. per car; consequently the average loading for July, 1918, for the same part of the lines, was 11.68 per cent greater than that for the same month last year.

Both 1917 and 1918 were years of heavy loading as the result of the car conservation campaign carried on by the superintendent of freight transportation and the superintendent of freight station service. A better conception of the results received is secured by comparing the 1918 figures with those for July, 1912, when the loading of l. c. l. freight averaged less than 11,000 lb. per car. If the same standard of performance had obtained in July, 1918, which obtained in the same month of 1912, it would have required 43,803 cars instead of 23,856 cars to have handled the 475,224,895 lb. of l. c. l. freight which were transported by the Pennsylvania Lines west of Pittsburgh last month.

As indicated in the article in the *Railway Age* of January 25, monthly l. c. l. loading records are kept for each division and each station forwarding 15 or more cars per month. These bulletins enable the division superintendents and freight agents to ascertain their progress.

The quantity of l. c. l. freight handled in July, 1918, was smaller than in the same month of last year or six years ago. This leads one to believe that the intensive loading campaign has induced shippers to bring their business up to carload quantities, which of course benefits transportation conditions, provided the shipper loads above the minimum. As the congestion of freighthouses is one of the worst impediments to efficient railway operation, the conservation of car space and the reduction in l. c. l. business is of considerable importance during a period of swollen freight traffic. The following statistics of l. c. l. loading on the Pennsylvania Lines west of Pittsburgh, were prepared by the superintendent of freight station service at Pittsburgh, Pa., and show a marked improvement in the records for this year over 1917.

PENNSYLVANIA LINES WEST OF PITTSBURGH

Total Number of Cars Used in Forwarding L.C.L. Freight in July, 1918, and in July, 1917

	July, 1918	July, 1917	Decrease, cars	Decrease, per cent
Pennsylvania Lines	23,856	33,471	9,615	28.72
Northwest System	10,202	15,350	5,148	33.53
Central System	2,158	2,901	743	25.61
Southwest System	11,496	15,220	3,724	24.46
St. Louis System	3,052	*	.....	.....

Total Weight in Pounds of L.C.L. Freight Forwarded in July, 1918, and in July, 1917

	July, 1918	July, 1917	Decrease, pounds	Decrease, per cent
Pennsylvania Lines	475,224,895	596,994,250	121,769,355	20.39
Northwest System	201,460,717	279,106,449	77,645,732	27.81
Central System	39,720,503	44,942,233	5,221,730	11.61
Southwest System	234,043,675	272,945,568	38,901,893	14.26
St. Louis System	46,866,520	*	.....	.....

Average Number of Pounds Per Car of L.C.L. Freight Forwarded in July, 1918, and in July, 1917

	July, 1918	July, 1917	Increase, pounds	Increase, per cent
Pennsylvania Lines	19,920	17,836	2,084	11.68
Northwest System	19,747	18,182	1,565	8.60
Central System	18,406	15,491	2,915	18.81
Southwest System	20,358	17,933	2,425	13.52
St. Louis System	15,356	*	.....	.....

*St. Louis System not included in comparisons as no figures available for July, 1917.

Don't Let the Kaiser Get Away Now.

The Bonner Rail Wagon System

THE BONNER RAIL WAGON SYSTEM which is now being worked out by a syndicate of public utility and equipment manufacturing interests, with Colonel Joseph C. Bonner, the inventor, as syndicate manager, is intended primarily as a means of solving the freight carrying problem on electric railroads, but its advocates believe that it may also prove of great value to the steam railroads, particularly from the point of view of less than carload traffic.

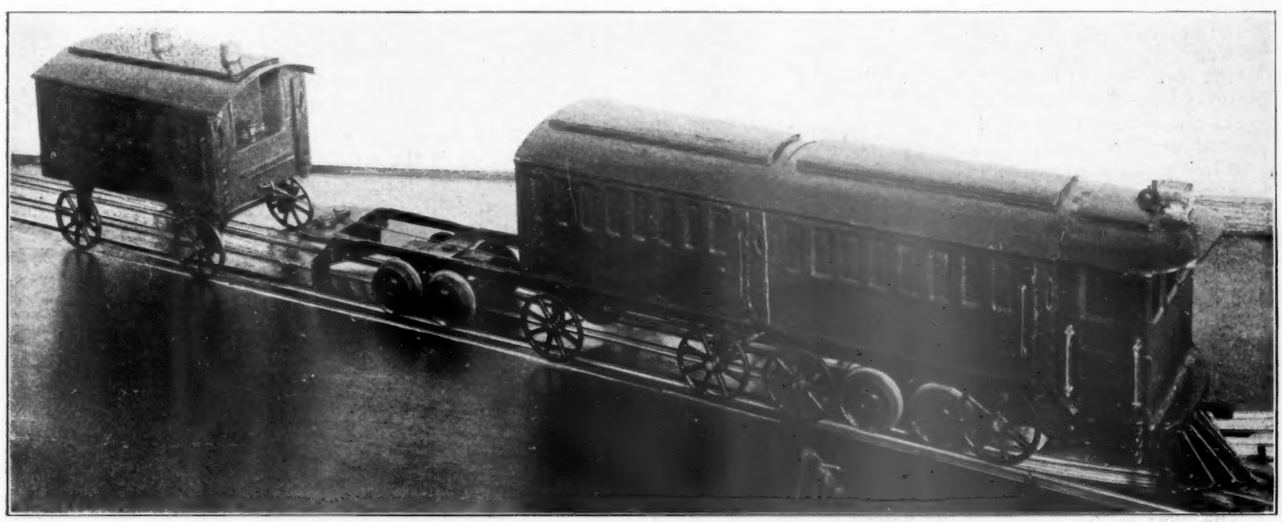
The system proposes a method whereby merchandise may be carried from its source to its destination without rehandling. The most important factor is the so-called "rail-wagon," which is a van or container either horse drawn or motor driven, into which the merchandise is placed, the van or container then being hauled to a railway terminal or receiving point where it is loaded, as it stands, upon a specially designed chassis or carrier for transportation by steam or electric power. This carrier vehicle or chassis may be a self-contained gasoline or electric motor car, or a trailer adapted to either electric or steam haulage. The van or container will be nominally of five tons capacity and will have no abnormal proportions of weight over vehicles now generally in use on the highways. It is to be constructed of steel and is to be mounted on standard wheels, the body itself to be, say, 16 ft. by 7 ft. by 7 ft. in size. From one to four of the containers may be loaded on the chassis noted above.

The containers are constructed in a way that eliminates the usual cross axle of a wagon, wheels being about 40 in. in diameter, thus providing for a clearance space beneath the bodies which permits of these containers being moved astride the carrier car. Utilizing the ordinary air brake equipment for operating jacks on the chassis, the containers are raised about one foot and are then ready for transportation. The containers are patterned so that the several wagon mounts on one single carrier car are vestibuled, meeting end to end, thus presenting an unbroken car body alinement. The width over all of the carrier car is set at 7 ft. In order to insure the prompt centering of the container body on the carrier car, alinement rails may be placed alongside the track rails, thus forming a groove into which the wheels of the container will be guided before the actual mounting of these containers on the carrier cars is undertaken.

It is evident that the loading of the containers either for single car or train movement can be accomplished with despatch, it being apparently entirely practicable to line up a large number of containers astride the railway tracks, perhaps in a terminal provided for this purpose, arranged in proper order as to destination, so that the carrier cars may be run beneath them and the containers then lifted clear of the street or track level by the application of air (the bottom of the container body resting on the lift of the carrier car). The train can thus in a short space of time be made ready to move upon its journey.

As to delivery at destination, the containers would be dropped off the carrier car either in the terminal yards provided or at the local freight station, being lowered by the air equipment until the wheels rest on the street level, the carrier car then being drawn from under and the container left astride the tracks whence it could be removed by horse or motor power.

The rail wagon, as above noted, is to be so constructed that when it is disengaged from the chassis it may be drawn over the road by horses or as a trailer behind a motor tractor. But with the co-operation of a motor truck builder, plans have also been drawn up for an additional motor vehicle to be known as an "auto hoss." This vehicle is a modified motor truck of five to six tons capacity adapted to the Bonner system by attaching to the frame two side channels placed like running boards, which serve as tracks for the Bonner rail wagon. The rear axle has been shortened so that the rail wagon can be loaded onto the auto hoss and carried to its destination. Provision has also been made whereby the Bonner wagon may be drawn into place or unloaded by the engine of the truck by means of a chain connected with the yoke of the rail wagon.



Working Model of the Bonner Rail Wagon System as Worked Out for Electric Railway Operation

The Bonner rail wagon system is meant primarily to eliminate rehandling of freight between origin and destination, whereby its use is expected to save these rehandling costs and the loss and damage claims resulting from such rehandling. But it has the further important advantage, its advocates claim, in that it supplies small units of from one to eight tons capacity, three or four of these units being capable of being loaded without rehandling or intermixture in any way on one rail chassis instead of being mixed up in one large freight car. This will supply, in short, the advantages of small shipments with much heavier carloading than is possible today in l.c.l. freight.

The idea has received the careful and detailed consideration of a number of engineers connected with street railways, car building companies and steam railroads, and detailed reports have been made in favor of its adoption in a trial form at least. One of the reports made by a committee of five street railway engineers has proposed its adoption on the Public Service Railway of New Jersey and the Hudson & Manhattan out of New York.

He Must Give Up ALL His Ill-Gotten Gains.

General News Department

The First Nine Months of Government Operation of the Railways was the subject of a paper presented before the Western Society of Engineers, Chicago, on Monday evening, October 7, by E. T. Howson, western editor of the *Railway Age.*

The tax on parlor and sleeping car berth and seat tickets will be eight per cent instead of ten per cent if Congress adopts the change in the revenue bill to this effect, which has been passed by the House and recommended by the finance committee of the Senate. Director General McAdoo requested this change for the purpose of making the tax uniform on passage tickets and Pullman tickets.

Earnings of Express Companies

The monthly bulletin issued by the Interstate Commerce Commission of the operating revenues and expenses of express companies for the four months ending with April, 1917, shows a deficit for the eight companies covered by the report of $4,442,815, as compared with an operating income in the corresponding period of 1917 of $1,060,354. Charges for transportation were $81,572,920, an increase of $13,000,000 for the four months ending with April, 1917, while operating expenses of $45,861,562 were over $11,000,000 greater. The larger proportion of revenues paid for railroad privileges and a decrease in the revenue from operations other than transportation account principally for the deficit. For the month of April the deficit was $1,046,244.

Railroads File Claims for Special Compensation

Eighty railroads have filed with the Railroad Administration claims for special compensation during Federal control on account of special considerations which affected their operating income during the three test years before the war, and for which they ask compensation in addition to the standard return. These special considerations are such items as additional mileage, etc., or expenditures for improvements or equipment of which the benefit was not reflected in the three-year average in operating income.

Two conferences have been held by representatives of these roads with the representatives of the Railroad Administration, who are expected to announce this week the basis on which they will consider claims for special consideration.

Revision of M. C. B. Interchange Rules for 1918-19

Supplement A to M. C. B. Circular No. 16, referring to the revised interchange rules, has just been issued stating that all prices shown in Rules 98, 101, 107, 111 and 112 are effective October 1, 1918. Revised Rules 104, 106 and 108 are also effective October 1, 1918. However, it should be understood that old Rules 58 and 95 governing responsibility are still effective. That portion of Rule 104 which allows material charge for missing brake beams, and that portion of Rule 111 which allows charge for missing air-brake parts is not effective until November 1, 1918.

Circular No. 45, which provides that no bill shall be made for certain items of minor repairs to railroad owned cars, has been modified to apply only to cars belonging to roads under United States Federal control; this provision being also effective October 1, 1918, and known as Article III.

20 Killed in Accident at Bedford, Ohio

At the McMyler Interstate Company's plant, at Bedford, Ohio, on the morning of October third, 48 workmen, who had just alighted from a southbound passenger train, and while standing or walking on the northbound track, were struck by an express train, and 20 of the men were killed; 28 were injured, three of them probably fatally. There was a dense fog at the time.

Bedford is on the Pennsylvania Lines, ten miles south of Cleveland. The place at which these men got off the train appears to be a temporary passenger station established to accommodate the McMyler works.

According to an officer of the road, quoted in a Cleveland paper, it appears that some or all of these workmen got off the train before it had come to a stop, and before there had been time for a flagman to get off and run forward to signal the northbound train.

Bridge and Building Convention

Further details relative to the program for the convention of the American Railway Bridge and Building Association, which will be held at the Hotel Sherman, Chicago, on October 15-17, inclusive, have been completed since the publication of the program in our last issue. C. A. Morse, assistant director, division of operation, engineering and maintenance, of the United States Railroad Administration, will speak before the convention on Tuesday afternoon on "Essential Work." Moving pictures and descriptions of recent bridge erection work which will be presented on Tuesday evening will include the erection of the Quebec bridge, described by George F. Porter, engineer of construction of the St. Lawrence Bridge Company, who was in charge of the preparation of the erection details for this structure. Moving pictures will also be shown of the erection of viaducts on the Illinois Central track elevation work through the Hyde Park section of Chicago.

Railway Fire Protection Association

The fifth annual meeting of the Railway Fire Protection Association will be held at the Congress hotel, Chicago, on October 15, 16 and 17. Charles N. Rambo, manager of the Insurance and Fire Protection section of the United States Railroad Administration, is scheduled to deliver an address on the first day on "The Co-operation Expected of Fire Protection Associations." L. F. Shedd, superintendent of safety and fire protection on the Rock Island Lines will speak on "The Advantage of Having an Insurance and Fire Protection Section." In addition the following committee reports will be presented: Statistics—S. B. Berry, chairman; Fire Protection and Passenger Equipment—George L. Ball, chairman; Hand Book on Railroad Fire Prevention and Protection—Robert Scott, vice-chairman.

At the morning session of October 16, Robert Scott will read a paper on "Maintaining Interest in Fire Protection Work," and E. Wanamaker, electrical engineer of the Rock Island Lines, will discuss "The Handling of Acetylene Welding Outfits in Shops." R. H. Newbern, superintendent of insurance and safety, Pennsylvania Railroad, will also read a paper. In addition the following committee reports will be presented: Committee on Guards and the Government's View in Relation Thereto, Guarding and Watchman Problems in Terminals and Yards—H. A. Bruck, superintendent of insurance, Western Maryland, vice-chairman; Committee on the Locomotive Spark and Ash Pan Hazard—E. C. Sasser, chairman; Committee on Fire Protection and Protection in Terminal Classification and Storage Yards—F. A. Green, Pennsylvania Railroad, chairman.

In the afternoon of October 16, C. N. Beistle, chemist of the Bureau of Explosives, will read a paper on "Welding, Cutting and Sawing Processes—Oxy-acetylene Equipment." W. F. Hickey of the New York, New Haven & Hartford, will read the report of the Committee on Wharves and Piers, of which he is chairman. The remainder of the afternoon session and the session of October 17, will be devoted to open discussion and the election of officers.

Traffic News

During the month of September, 1918, the Pennsylvania Railroad moved an average of 6,835 cars a day over its main line between Pittsburgh and Harrisburg, as compared with an average of 5,049 in September, 1917, an increase of 886 cars, or 11.5 per cent.

A total of 112,600 more cars of grain were loaded by the railroads during the period from July 1 to September 28, 1918, than during the corresponding period of 1917, according to a statement issued by the Railroad Administration. The total for 1918 was 399,770, as compared with 287,170 in the corresponding period of 1917.

Roads in the Central Western region report that the handling of grain under the embargo and permit system is working satisfactorily and not so many complaints have been received regarding it as were expected. The live stock movement in the region has been very heavy, taxing to the limit the facilities at Kansas City and Omaha. The sailing-day plan has been established at additional cities, effecting a further saving of 270 cars a week. Reports for the week ending October 1, show a saving of 44,721 car miles through rerouting. The Denver (Colo.) consolidated ticket office was opened on September 23.

In connection with the restrictions upon the shipment of lumber to points north of the Ohio and Potomac and east of the Mississippi rivers, effective on September 16, the Railroad Administration has established extension bureaus of the Car Service Section for the issuance of permits at Boston, Cincinnati and Chicago. F. E. Dewey, Boston, will issue permits for lumber destined to points in New England; H. B. Sargent, Cincinnati, will take care of destinations within the state of Ohio, and W. L. Barnes, assistant manager, Car Service Section, Chicago, will issue permits for movements to points in Wisconsin, Michigan, Illinois and Indiana.

Baltimore & Ohio and Pere Marquette passenger trains now enter Chicago over the Pennsylvania from Pine Junction, Ind. This change saves seven miles in distance. The roads operate 18 trains in and out of Chicago, so that approximately 41,000 train miles will be saved yearly. Another important feature of the change is that the roads will use the Union station at Englewood and the Pennsylvania station at South Chicago, the present Baltimore & Ohio-Pere Marquette stations at those points being abandoned. These trains will continue to run in and out of the Grand Central station, Chicago (from 16th Street), but on account of the reduction in mileage the schedules are shortened about 20 minutes.

On Monday, October 7, the number of cars of live stock and perishable freight moved east from Chicago was 1,318, or 59 more cars than ever before on one day. These cars were loaded with:

	Cars
Live stock	242
Dressed beef	392
Provisions and other perishables	684
Total	1,318

The previous high record was made on Saturday, the 5th of October, when 1,259 cars of such foodstuffs were moved east. The average for the past seven days is greatly in excess of that for any similar period since January 1, being 1,143 cars daily.

Coal Production

Bituminous coal production during the week ended September 28 is estimated at 13,043,000 net tons, representing the third successive week of increased production and an increase over the corresponding week of 1917 of 1,863,000 net tons, or 16.7 per cent, according to the weekly bulletin issued by the United States Geological Survey. During the past six months, or the first half of the coal year, production of bituminous coal is estimated at 311,216,000 net tons, which is 33,418,000 net tons, or 12 per cent in excess of the production during the corresponding period of 1917, but falls short of the requirements for the calendar year to date by 3.4 per cent.

The percentage of full time output lost on account of car shortage during the week ending September 21 is reported as 5.9 per cent.

The production of anthracite during the week ended September 28 is estimated at 2,071,000 net tons, an increase over the corresponding week of last year of 3.2 per cent. The total production since April 1 is estimated at 51,651,000 net tons, an increase over 1917 of 2.1 per cent.

The report by the Car Service Section of the Railroad Administration for the week ending September 21 shows a total loading of all kinds of coal amounting to 260,840 cars, as compared with 223,233 during the corresponding week of 1917. With figures for the week ended September 28 estimated, the increase in 1918 up to September 28 over the corresponding period of 1917 is 641,761 cars.

New England's Minimum Fuel Requirements Met in Advance

Continuous operation of the war industries of New England during the approaching winter is assured, says a statement issued by the Fuel Administration, unless an unforeseen catastrophe to the mines, the railroads, or the coastwise shipping, during October and November, interrupts production of coal and its transportation. Unremitting vigilance in the conservation of coal, however, will continue to be absolutely necessary. If this be observed not even a repetition of last winter's weather will prevent the furnaces of New England from operating at full blast.

The subordination by the Fuel Administration of the requirements of other industrial centers to those of New England is not an indication that the industries of New England are of greater importance; transportation difficulties alone have controlled the Administration's policy. The railroad facilities of New England are limited and this fact necessitates the transportation by water of 66 per cent of the bituminous coal consumed in that territory. Approximately 75 per cent of the war industries of the United States are located east of the Allegheny Mountains and north of the Potomac river, and a large proportion of that percentage is situated in New England. The requirements of other localities, in the order of their several transportation difficulties, will now be attended to.

Special Meals for Traveling Officers and Enlisted Men

The Railroad Administration and the war and navy departments have recently agreed upon an arrangement for furnishing meals in dining cars and eating stations to officers and enlisted men which is proving very popular with men in the service. The war and navy departments have raised the meal allowance to 75 cents. In some instances the former allowance was 50 cents and in others 60 cents. Orders have been issued that a substantial and appetizing table d'hote meal be furnished for this sum. The weight of each article on the menu will equal or exceed the army and navy rations. The arrangement will apply to officers and men traveling at their own expense as well as to those who are traveling on government orders, and includes inducted men on their way to enter the service.

Typical menus for breakfast, luncheon and dinner are shown below:

BREAKFAST
Fruit or Cereal
Ham or Bacon
Eggs
Potatoes
Bread and Butter
Tea, Coffee or Milk

LUNCHEON
Soup
Relish
Roast, Stew or Boiled Meat
Two Vegetables (Potatoes and One Other)
Bread and Butter
Tea, Coffee or Milk
Dessert

DINNER
Soup
Relish
Roast, Stew or Boiled Meat
Two Vegetables (Potatoes and One Other)
Bread and Butter
Tea, Coffee or Milk
Dessert

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has withdrawn its request of March 17, 1916, that copies of embargo notices and rules and regulations be filed with the commission.

Express Rate Hearing

The Interstate Commerce Commission held a hearing at Washington on October 8 for the purpose of hearing testimony on which to base an answer to the questions put to the commission by Director General McAdoo as to whether the method of advancing express rates proposed by the express company is a proper one, and adequate for the purpose of raising the estimated $10,000,000 to $12,000,000 additional revenue needed to cover increased wages and other expenses of the express company. Because approximately half of the gross revenues from express traffic go to the railroads the express company had prepared a plan designed to raise approximately $24,000,000 of increased gross earnings. Practically no representatives of the shippers took part in the hearing, although there were several state commissioners, particularly from the west. J. W. Newlean, vice-president, in charge of accounting, of the American Railway Express Company, was the first witness and explained that the express company had proposed what it deemed the simplest method of raising the required additional revenue, taking into consideration the proper distribution of the burden. The largest increase under this method falls on the traffic in the first zone, for the reason that the operating costs are much higher in that zone than in the others, particularly since the United States entered the war, on account of the congestion in the east. In reply to questions by Commissioner Hall, he said that other methods which have been used were not susceptible of an exact estimate as to the effect and that the percentage method was not used because it was felt that a larger share of the increase should be borne by the short haul traffic, in the case of which the terminal expense is a large factor.

Personnel of Commissions

Alexander Wylie, assistant chief examiner of accounts of the Interstate Commerce Commission, has been appointed chief of the bureau of carriers' accounts; office at Washington.

Court News

Postponement of the hearing of all pending anti-trust suits was asked of the Supreme Court on Monday in motions filed by Attorney General Gregory. The suits on which postponement was asked include those against the anthracite coal carriers and also the Southern Pacific case.

Track Scales

The Missouri Supreme Court holds that the State Public Service Commission Law of 1913 gives the commission power to order the erection and maintenance of track scales when in its judgment the facts warrant it, and is in conflict with and has impliedly repealed Rev. St., 1909, § 3157, providing that railroads shall maintain track scales at all stations shipping 50,000 bushels of grain the previous year. On the appeal of the Missouri Pacific it is held that the terms of the older act no longer fix the measure of public necessity; and although some evidence shows the quantity of grain therein named, the commission is not bound to find a public necessity where other evidence discloses a different situation.—State ex rel. Missouri Pacific (Mo.), 204 S. W., 395. Decided June 13, 1918.

Equipment and Supplies

Locomotive builders in the month of September turned out 480 locomotives, according to reports to the Railroad Administration. The locomotives delivered to the railroads under government control, amounted to 251, of which 151 were delivered by the American Locomotive Company, 78 by the Baldwin Locomotive Works and 22 by the Lima Locomotive Works. This brings the total number of locomotives delivered to the railroads under government control for the year to date to 1,951. In addition to those already mentioned, during September the builders shipped 16 miscellaneous locomotives and completed 213 foreign locomotives. Of the United States Railroad Administration's locomotives, 174 have now been delivered.

Freight Cars

FALLANSBEE BROS., Pittsburgh, Pa., are inquiring for two drop bottom cars.

THE MERRILL STEVENS SHIP BUILDING CORPORATION, Jacksonville, Fla., is inquiring for one 80,000 lb. capacity flat car.

THE UNITED STATES RAILROAD ADMINISTRATION is preparing to place orders for 886 baggage cars, including both the 60-ft. and 70-ft. types, the designs for which were described in the *Railway Age* of September 27, page 585. The administration has asked for the allotment of the steel required for these cars.

THE WAR INDUSTRIES BOARD is expected to place orders shortly for approximately 5,000 four-wheel gondola cars for the Italian government, on which bids were asked of the builders to be submitted by October 10. Representatives of the principal car building companies were in Washington in connection with the matter last week. It was originally proposed to order as many as 10,000.

Passenger Cars

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio, is inquiring for one combination passenger and baggage car.

Miscellaneous

CHESAPEAKE & OHIO.—This road has awarded a contract to the Roberts & Schaefer Company, of Chicago, for the building of a 500-ton capacity reinforced concrete, automatic, electric locomotive coaling plant, using the Duplex shallow pit feeder, for installation at Concord, Ky. A similar plant for this road is now being constructed by the Roberts & Schaefer Company, at Handley, W. Va.

PENNSYLVANIA RAILROAD, WESTERN LINES.—This road has awarded a contract to the Roberts & Schaefer Company, Chicago, for the removal of the present elevating equipment at its coaling plant, at Conway, Pa., and the installation of its standard automatic-electric duplicate counter balanced elevating buckets, with R. and S. tram car distributing equipment on the existing bins. The Pennsylvania has also awarded two other contracts to the Roberts & Schaefer Company, one for a 1,000-ton reinforced concrete automatic-electric locomotive coaling plant for four tracks, to be installed at Dennison avenue, Columbus, Ohio, and the other for a 500-ton four-pocket coaling plant of reinforced concrete construction, with automatic-electric elevating equipment for installation at Richmond, Ind.

MEXICAN RAILWAY CONSTRUCTION.—It has been decided to construct branches from Mascota, Mexico, and Autlan, to connect with the line of railway now being built between Guadalajara and Chamela, a port on the Pacific ocean. These branches will open up rich mineral and agricultural regions.—*The Engineer, London.*

Supply Trade News

S. W. Baker has been appointed manager of the extra work department of the Lima Locomotive Works, Inc., and **M. K. Tate** has been appointed manager of the service department.

The Pacific Car & Foundry Company is having plans prepared for a one-story plate shop, 100 ft. by 340 ft., to be constructed in East Fifty-fifth street, Portland, Ore. The building will cost about $30,000.

Garland P. Robinson, who has been assistant chief inspector of locomotive boilers for the Interstate Commerce Commission since March, 1911, has resigned that office, effective on October 15, to take a place with the American Locomotive Company.

The T. H. Symington Company, Rochester, N. Y., has closed its Chicago and Baltimore offices for the period of the war. All inquiries and correspondence from the Chicago territory will be handled by the Rochester office and from the Baltimore territory by the New York office.

Frank H. Brown has been appointed sales manager of the Sherritt & Stoer Company, Inc., Philadelphia, Pa., and assumed his new duties October 7. Mr. Brown was one of the founders of the Brown & Zortman Machinery Company, Pittsburgh, Pa., and has been associated more recently with the Davis Machine Tool Company of Rochester, N. Y.

A. G. Lapierre, until recently assistant in the Northwestern regional director's office, has been appointed traffic manager of the Chicago Pneumatic Tool Company, with headquarters at Chicago, succeeding **E. H. Greene,** resigned. **F. O. Southbrook,** efficiency man with Joseph T. Ryerson & Son Co., Chicago, has been appointed manager of the order and production department of the same company, with headquarters at Chicago.

W. W. Coleman, president of the Bucyrus Company, South Milwaukee, Wis., and **T. H. Symington,** president of the T. H. Symington Company, Rochester, N. Y., have both been appointed special representatives to the chief of ordnance, with office at Washington. Mr. Coleman will be in charge of all matters relative to the production of cannon, carriages, their equipment and appurtenances and accessories. Mr. Symington will have charge of artillery ammunition, metal components.

The W. J. Crouch Company, Inc., and Rownson, Drew & Clydesdale, Inc., announce the amalgamation of their respective organizations under the name of Rownson, Drew & Clydesdale, Inc., with general offices at 68 William street, New York. P. G. Donald, president of Rownson, Drew & Clydesdale, Inc., will continue in this office, while I. Smullyan, president of the W. J. Crouch Company, Inc., will act as managing director of the new firm. Victor E. Karminski and A. E. Hearne, both treasurer and general manager of the W. J. Crouch Company, Inc., and Rownson, Drew & Clydesdale, Inc., respectively, will in future act as joint general managers of the new concern, Mr. Karminski conducting the Crouch steel division, and Mr. Hearne directing all other trading operations. Elaborate plans have been made for the further development and expansion of the Rownson, Drew & Clydesdale engineering division in order to cope with the demand for the gravity runways, portable elevator conveyors and other labor saving devices. These plans will be carried out under the personal direction of John J. Smart, secretary and assistant general manager of the W. J. Crouch Company, Inc. M. Oppenshaw, who has hitherto had charge of the advertising for the W. J. Crouch Company, Inc., will be advertising manager for the new company. H. Lad Landau, assistant secretary and general manager of sales of the W. J. Crouch Company, will continue with the new concern. So will other leading officers of the company, including John H. Allen, purchasing agent, who will in the future be assisted by M. Greenberg, of Rownson, Drew & Clydesdale, Inc.; Albert Smullyan, comptroller; O. W. Andrews, traffic manager and head of the licensing bureau, and all others occupying positions of trust with the old companies.

Railway Construction

BALTIMORE & OHIO.—This road is making improvements to its roundhouse facilities at Lorain, Ohio, which will cost about $156,000.

LONG ISLAND.—This road has awarded a contract to the Austin Company, Cleveland, for the construction of a building, 60 ft. by 225 ft., at Jamaica, N. Y., to cost approximately $40,000 and to be erected in 45 working days.

MICHIGAN CENTRAL.—This road has awarded a contract to G. F. Bristol, Detroit, Mich., for the erection of an overhead bridge at Miles street, Ypsilanti, Mich., to carry a highway over the tracks of the railway. The viaduct will replace an old structure which has been in existence since the railroad was built through the city. The bridge will be built practically on the site of the old one, except that it will be skewed over the tracks so as to carry the highway practically in a straight line. The bridge will be of steel girders and reinforced concrete construction and will cost approximately $40,000.

The Strauss Bascule Bridge Company is preparing plans for the construction of a double-track lift bridge to carry the Michigan Central and the New York Central tracks over the River Rouge, south of Detroit, Mich., to replace an old structure which is too light to carry the increased loads. The river is to be widened and deepened under the Rivers and Harbors Act, and consequently the new bridge will have a clear opening of 125 ft. The structure will be of steel and the estimated cost $541,000, which will be borne equally by the two railroads. Bids have not yet been asked for.

The Michigan Central has commenced the construction of a classification yard, a roundhouse, machine shop, transfer platform, car repair yard, etc., and a connection between the main line and the Air Line division at Niles, Mich., to cost approximately $1,358,000. The appropriation for this year includes the completion of a 30-stall roundhouse, a machine shop, a coaling station and other facilities needed at the engine terminal and for the building of about 47 miles of track. About 500,000 yd. of grading is involved in the work now under way. Joseph E. Nelson & Son, Chicago, have the contract to erect the roundhouse and other buildings; the Link-Belt Company, Chicago, has a contract for the construction of a 300-ton coaling station, and the Dominion Construction Company, Toronto, Ont., has been given a contract for the grading, track laying and ballasting.

MISSOURI PACIFIC.—This road will soon commence the construction of an engine house at Council Grove, Kan., to cost about $6,000. The building will have three stalls, 110 ft. long, and will be constructed by railroad forces. The rear walls of the structure will be of brick and the balance of the building will be of heavy frame construction.

The road is now constructing a store and oil house, 40 ft. by 75 ft., at Osawatomie, Kan., which will cost approximately $15,000. It will be a one-story brick structure with concrete basement and timber roof. The work is being done by J. C. Duncan, St. Louis, Mo.

A contract has also been let for the construction of a dry lumber shed at Sedalia, Mo., which will cost approximately $10,000.

PACIFIC GREAT EASTERN.—This company has awarded a contract to the Northern Construction Company, Ltd., Vancouver, B. C., for an extension from Mile 183, north of Squamish, B. C., to Mile 225 north of that point, or a distance of 42 miles. In addition to grading, track-laying, ballasting and the installation of telegraph and telephone lines, the work involves the construction of station buildings, section houses, water tanks and four timber trestles, two of which will be 300 ft. in length, one 600 ft. and one 900 ft. long. Track has been laid for seven miles and one bridge has been constructed. J. W. Kelly, Clinton, B. C., has the contract for the construction of the bridges which involve the use of 684,000 ft. b. m. of lumber.

Have You Doubled Your Third Loan Subscription?

Railway Officers

Railroad Administration

General

W. C. DeLanoy, heretofore director of the bureau of war risk insurance of the Treasury Department, has been appointed manager of the section of marine insurance of the Railroad Administration, with office at Washington, D. C.

C. B. Heinemann, secretary of the National Association of Live Stock Exchanges, has been appointed traffic assistant in the division of public service and accounting, with office at Washington, and will give particular attention to matters pertaining to live stock traffic.

Regional

A. B. Newell, general manager of the Toledo Terminal Railroad, has also been appointed general manager of the local terminals.

Thomas E. Paradise, whose appointment as mechanical assistant on the staff of the Central Western regional director, with headquarters at Chicago, was announced in the *Railway Age* of September 27, was born at Peoria, Ill., on November 22, 1880. Mr. Paradise entered railway service on October 2, 1897, as a machinist apprentice with the Chicago, Burlington & Quincy at Hannibal, Mo. Five years later he enlisted in the U. S. navy as a second class machinist, in which capacity he served four years. At the expiration of his enlistment he returned to Hannibal and entered the service of the Chicago, Burlington & Quincy as a machinist. In 1912, he was promoted to roundhouse foreman at LaCrosse, Wis., and in 1916, he became master mechanic at Centerville, Iowa. The following year he was transferred to Hannibal, in the same capacity, where he remained until his appointment as mentioned above.

Federal and General Managers

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy, and several smaller roads, has had his jurisdiction extended over the Paducah & Illinois.

J. A. Edson, federal manager of the Kansas City Southern and other lines, has had his jurisdiction extended over the Missouri & North Arkansas, which road was recently placed under federal control.

F. C. Batchelder, general manager of the Baltimore & Ohio Chicago Terminal, with headquarters at Chicago, has had his jurisdiction extended over the Chicago Heights Terminal Transfer, effective October 1.

J. M. Gruber, general manager of the Great Northern, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with the same headquarters, effective October 1.

W. A. Winburn, federal manager of the Central of Georgia, has been appointed federal manager also of the Louisville & Wadley, the Sylvania Central, the Wadley Southern, and the Wrightsville & Tennille, with office at Savannah, Ga.

A. Robertson, federal manager of the Missouri Pacific, the St. Louis Southwestern, lines north of Texas, the Louisiana & Arkansas and the Southern Illinois & Missouri Bridge, has had his jurisdiction extended to include the Arkansas Central, with headquarters at St. Louis, Mo., effective October 1.

C. M. Kittle, federal manager of the Illinois Central, the Yazoo & Mississippi Valley, the Gulf & Ship Island, the Mississippi Central, the New Orleans Great Northern and the St. Charles Air Line, has been appointed federal manager also of the Helena Terminal (at Helena, Ark.), with office at Chicago, Ill.

J. F. Murphy, general manager of the Missouri Pacific, and of the Chicago, Rock Island & Pacific line from St. Louis, Mo., to Kansas City, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

Operating

The St. Louis & Belleville Electric has been relinquished from federal control.

R. E. Hanrahan has been appointed superintendent of the Camas Prairie, with headquarters at Lewiston, Idaho, effective October 1.

R. A. Rice has been appointed general superintendent of the St. Paul Union Depot, with headquarters at St. Paul, Minn., succeeding **R. R. Auerbach,** effective October 1.

J. C. Deans, trainmaster of the St. Louis & O'Fallon, with headquarters at East St. Louis, Ill., has been placed in charge of the operation of that road, succeeding **C. S. Darrach.**

J. H. Bice, general manager of the Ontonagon Railroad, with headquarters at Ontonagon, Mich., has been appointed superintendent, with the same headquarters, effective October 1.

C. W. Kates, general manager and purchasing agent of the Escanaba & Lake Superior at Wells, Mich., has been appointed general superintendent, with the same headquarters, effective October 1.

R. G. Edwards, assistant engineer of the Canadian Pacific, with office at Havelock, Ont., has been appointed assistant superintendent of the Windsor subdivision, with office at London, vice **F. S. Rosseter,** transferred.

O. C. Schaad, trainmaster of the Pennsylvania Lines West of Pittsburgh, Southwest system, with office at Columbus, Ohio, has been appointed assistant superintendent of the Eastern division on the Northwest system.

Charles Molony, president of the Wrightsville & Tennille, has been appointed general superintendent of that road, also the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, with headquarters at Dublin, Ga.

Roy W. Norris, chief clerk to the superintendent of telegraph of the Chicago & North Western, with headquarters at Chicago, has been appointed supervisor of telegraph and telephone service for the Northwestern region, with the same headquarters, effective October 1.

W. T. Louden, superintendent, auditor and general freight and passenger agent of the Missouri, Illinois Bridge & Belt, with headquarters at Alton, Ill., has been appointed terminal manager at Alton, with jurisdiction over the Alton switching district, including the area lying between Godfrey, Ill.; Glassy Lake, East Alton, and West Alton, Mo., effective October 7.

The jurisdiction of **W. N. Deramus,** superintendent of car service, and **R. L. Logan,** superintendent of telegraph, of the Kansas City Southern, with headquarters at Kansas City, Mo., was extended on September 16, over the Texarkana & Fort Smith, the Midland Valley, the Houston East & West Texas, the Vicksburg, Shreveport & Pacific, and the Joplin Union Depot. On October 1, Mr. Logan was appointed superintendent of telegraph also of the Kansas City, Mexico & Orient.

T. F. Durkin, assistant superintendent on the Denver & Rio Grande, at Salt Lake City, Utah, has been promoted to superintendent, with office at Helper, Utah, succeeding **S. L. Racey,** who has been granted a leave of absence to enter military service; **W. R. McPherson,** assistant superintendent at Helper, Utah, has been transferred to Salt Lake City, to succeed **A. J. Broderick,** assistant superintendent, with the same headquarters, who will assume the road duties of Mr. Durkin, promoted, effective October 1.

The Chicago, Indianapolis & Louisville and the Cincinnati, Indianapolis & Western have been consolidated for operating purposes under the following organization: Officers from the Chicago, Indianapolis & Louisville are **H. C. May,** gen-

eral manager at Lafayette, Ind., who has been appointed general superintendent at Chicago; **E. P. Cockrell,** general passenger agent, Chicago; **A. S. Kent,** chief engineer, Chicago; **B. Cassell,** acting federal treasurer, Chicago; **W. A. Callison,** superintendent motive power, Lafayette, Ind.; and **L. B. Morehead,** mechanical engineer, Lafayette, Ind., who have all been appointed to the same positions. **E. J. Roth,** purchasing agent at Chicago, has been appointed general storekeeper, with office at Indianapolis, Ind. From the Cincinnati, Indianapolis & Western, **J. A. Simmons,** general traffic manager at Indianapolis, has been appointed general freight agent at Chicago; **D. J. Curran,** treasurer, has been appointed acting local treasurer, with office at Indianapolis; **W. J. Hiner,** purchasing agent for the Cleveland, Cincinnati, Chicago & St. Louis, has been appointed purchasing agent for the above consolidated roads at Cincinnati, Ohio; and **J. L. Hampson** has been appointed fuel supervisor at Cincinnati.

Financial, Legal and Accounting

J. B. Lacy is now federal treasurer of the Norfolk & Western, with headquarters at Roanoke, Va., and not local treasurer as was mentioned in our issue of September 27, on page 609.

E. E. Whitted, district attorney of the Chicago, Burlington & Quincy, at Denver, Colo., has been appointed general solicitor of the Denver & Salt Lake, with headquarters at Denver.

E. M. Kuntz, auditor of the Lehigh & New England, has been appointed federal auditor, and **G. W. Sitgreaves** has been appointed federal treasurer; both with offices at South Bethlehem, Pa.

R. V. Onslow, formerly assistant auditor of the Northern Express Company, at St. Paul., Minn., has been appointed auditor of freight overcharge claims of the Northern Pacific, with office at St. Paul, Minn.

T. M. Cunningham, Jr., has been appointed acting general solicitor of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central and the Wadley Southern, with headquarters at Savannah, Ga.

A. V. Davis has been appointed acting federal treasurer of the Kansas City, Mexico & Orient, with headquarters at Wichita, Kan., succeeding **W. H. Ross,** who has resigned on account of ill health, effective October 1.

C. A. Clark, federal treasurer of the Northern Pacific, has also been appointed acting federal treasurer of the Camas Prairie, with headquarters at St. Paul, Minn., succeeding **J. F. Taggard,** treasurer, effective October 1.

H. H. Field, general solicitor of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroad, with the same headquarters, effective October 1.

G. J. Bunting, federal auditor, and **A. G. Loomis,** federal treasurer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, have had their jurisdictions extended to include the Escanaba & Lake Superior, with the same headquarters, effective October 1.

Ira A. Place, vice-president of the New York Central, with office at New York, has been appointed general solicitor, with headquarters at New York, in charge of the law department, the land and tax department, the claims department and the freight claim department.

J. A. Baumgardner, freight claim agent of the Southern Railroad System, with office at Washington, D. C., has been appointed assistant comptroller, in general charge of overcharge freight claims of the Southern and all other roads under the jurisdiction of E. H. Coapman, federal manager, vice J. J. Hooper, transferred to the law department in general charge of loss and damage freight claims.

John J. Beattie, vice-president and general counsel of the Lehigh & Hudson River, for the corporation, has been appointed general solicitor, and **Clifford S. Beattie** has been appointed claims attorney, under the United States Railroad Administration; both with offices at Warwick, N. Y.

Louis M. Patterson, assistant local treasurer of the Maine Central, has been appointed federal treasurer, with office at Portland, Maine, vice **Frank W. York,** assigned to other duties, and **George E. Raynes** has been appointed paymaster with office at Portland, in place of **Harold J. Cole,** promoted.

J. S. Hamilton, auditor of disbursements of the Seaboard Air Line, with office at Portsmouth, Va., has been appointed assistant general auditor, vice **L. R. Powell,** who has been appointed auditor for the corporation, and **L. L. Knight** has been appointed auditor of disbursements, vice Mr. Hamilton.

M. L. Countryman, general solicitor of the Northern Pacific; **F. A. Barnes,** federal auditor, and **L. E. Katzenbach,** federal treasurer, all with headquarters at St. Paul, Minn. have had their jurisdiction extended over the Farmers Grain & Shipping Railroad, with the same headquarters, effective October 1.

J. M. Featherston, assistant auditor of the Carolina, Clinchfield & Ohio, and the Carolina, Clinchfield & Ohio of South Carolina, has been appointed auditor, vice **J. A. Muse,** resigned, and **G. A. Masengill** has been appointed assistant auditor, vice Mr. Featherston; both with offices at Johnson City, Tenn.

E. J. White, general solicitor of the Missouri Pacific, the St. Louis Southwestern, and the Louisiana & Arkansas, and **F. P. Johnson,** general auditor of the Missouri Pacific, with headquarters at St. Louis, Mo., have had their jurisdictions extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

C. H. Worcester, president of the Ontonagon Railroad, with headquarters at Chassell, Mich., has been appointed acting federal treasurer, with headquarters at Ontonagan, Mich.; **R. Cousin,** auditor, with headquarters at Chicago, has been appointed federal auditor, with headquarters at Ontonagon, Mich., effective October 1.

James C. Davis, general solicitor of the Chicago & North Western, with headquarters at Chicago, has had his jurisdiction extended to include the Chicago, St. Paul, Minneapolis & Omaha, with the same headquarters, to succeed **J. B. Sheean,** who has been appointed general counsel for the Omaha and the North Western corporations.

W. B. McKinstry, general auditor of the Central of Georgia, has been appointed also acting federal auditor of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central and the Wadley Southern, and **W. C. Askew,** federal treasurer of the Central of Georgia, has been appointed also acting federal treasurer of the above mentioned four roads; both with headquarters at Savannah, Ga.

R. L. Kennedy, general attorney of the Chicago, St. Paul, Minneapolis & Omaha, has been appointed also general solicitor of the St. Paul Union Depot, the Minneapolis Eastern, and the Minnesota Transfer, with headquarters at St. Paul, Minn.; **C. Jensch,** federal auditor, and **C. P. Nash,** federal treasurer of the Chicago, St. Paul, Minneapolis & Omaha, have had their jurisdictions extended over the St. Paul Union Depot, the Minneapolis Eastern and the Minnesota Transfer, with headquarters at St. Paul, Minn., effective October 1.

A. C. Rhodes, general accountant of the Pere Marquette, the Grand Trunk Western Lines, the Detroit & Toledo Shore Line and the Fort Street Union Depot Company, with office at Detroit, Mich., has been appointed assistant federal auditor of all the above roads; also of the Ann Arbor, the Detroit & Mackinac, the Detroit, Bay City & Western, the Port Huron Southern, the Port Huron & Detroit, and the Lake Michigan Car Ferry Association; and **Fred Horton** has been appointed general accountant of all the above roads; both with offices at Detroit.

Traffic

The authority of **T. A. Graham,** assistant freight traffic manager of the Southern Pacific, with office at San Francisco, Cal., has been extended over the Western Pacific, the Tidewater Southern and the Deep Creek.

G. H. Smitton, traffic manager of the Great Northern, with headquarters at St. Paul Minn. has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with same headquarters, effective October 1.

H. E. Pierpont, traffic manager of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroad, with the same headquarters, effective October 1.

C. E. Perkins, freight traffic manager, and **C. L. Stone,** passenger traffic manager of the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas, have had their jurisdiction extended over the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., effective October 1.

J. G. Carlisle, assistant freight traffic manager of the Central of Georgia, has been appointed also general freight agent of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, and **F. J. Robinson,** general passenger agent of the Central of Georgia, has had his authority extended over the above named four roads; both with headquarters at Savannah, Ga.

Walter S. Randolph, whose appointment as assistant general passenger agent of the New York Central, with headquarters at Buffalo, N. Y., has already been announced in these columns, was born on May 13, 1862, at Brockport, N. Y., and was educated in the state normal school in his native town. He began railway work in July, 1878, on the New York Central, and served as telegraph operator and ticket clerk, at Brockport, until January, 1881 when he was transferred as ticket clerk to Medina, N. Y. He remained in the latter position until July, 1887, and then was traveling passenger agent, with office at Buffalo, N. Y., until October, 1900. He served as excursion manager, with headquarters at Buffalo, from October, 1900, to January, 1907, and since the latter date was general agent of the passenger department until his recent appointment as assistant general passenger agent of the same road as above noted.

W. S. Randolph

M. T. McCraney, assistant general agent of the freight department of the Chicago, Rock Island & Pacific, with office at Chicago, has been appointed division freight agent (Chicago Terminal division), with headquarters at Chicago. The following commercial agents have been appointed division freight agents, with headquarters at the same places as formerly: **F. H. Faus,** Colorado Springs, Colo.; **R. F. Atwood,** Kansas City, Mo.; **F. C. Johnson,** Memphis, Tenn., and **S. L. Parrott,** St. Joseph, Mo. **P. Portel,** assistant general freight agent, at Oklahoma City, Okla., has been appointed division freight agent, with office at the same place; **J. E. Utt,** general agent at Omaha, Neb., and **A. D. Aiken,** general agent at St. Louis, Mo., have been appointed division freight agents, with headquarters at the same places as formerly. **R. G. Brown** has been appointed division freight agent, with office at Minneapolis, Minn. **H. I. Battles,** general agent at Peoria, Ill., has been appointed division freight and passenger agent, with headquarters at Peoria.

The following changes have been made in the traffic department of the Atchison, Topeka & Santa Fe, the Kansas Southwestern and the Grand Canyon, effective October 1. **A. G. Sheer,** chief of the traffic bureau, with headquarters at Chicago, has been appointed assistant general freight agent, with the same headquarters. **W. H. Simpson,** general advertising agent, and **J. Brinker,** express and mail traffic manager, with headquarters at Chicago, have been appointed assistant general passenger agents, with the same headquarters. **C. L. Seagraves,** industrial commissioner, with headquarters at Chicago, has been appointed agricultural agent, with the same headquarters. **T. A. Walcott** has been appointed assistant general baggage agent at Topeka, Kan. **Charles Walsh** has been appointed assistant general baggage agent and **C. C. Dana** has been appointed assistant general freight and passenger agent at Amarillo, Texas. **H. K. Gregory,** assistant general passenger agent, at San Francisco, Cal., has been transferred to Los Angeles, Cal. **F. P. Cruice,** assistant general passenger agent at Phoenix, Ariz., has been appointed assistant general freight and passenger agent, with the same headquarters. **W. T. Treleaven,** general live stock agent, with headquarters at Kansas City, Mo., becomes live stock agent, with the same headquarters. The following division freight agents have been appointed: **J. F. Thompson,** general agent in the freight department at Chicago; **G. E. Roe,** general agent, freight department, at Kansas City, Mo.; **E. L. Jansen,** at Joplin, Mo., succeeding **E. C. Kitching; R. B. Cunningham,** at Topeka, Kan.; **G. W. Vetter,** general agent, at Tulsa, Okla. The following division passenger agents have been appointed: **G. T. Gunnip,** general agent, passenger department, at Chicago; **J. P. Hall,** general agent, passenger department, at Denver, Colo.; **George W. Hagenbuch,** general agent, passenger department, at Kansas City, Mo., and **J. P. Lindsay.** The following division freight and passenger agents have been appointed: **T. B. Gallagher,** at Amarillo, Tex.; **W. R. Brown,** at El Paso, Tex.; **R. M. Batcheller,** general agent, at St. Joseph, Mo.; **F. M. Williams,** at Trinidad, Col

Engineering and Rolling Stock

E. R. Manor, chief electrician of the Northern Pacific, with office at St. Paul, Minn., has been appointed assistant engineer of tests.

James D. Young has been appointed road foreman of engines on the Lehigh & Susquehanna division of the Central of New Jersey, with office at Ashley, Pa.

Harry Modaff has been appointed division master mechanic on the Chicago, Burlington & Quincy, at Hannibal, Mo., succeeding **Thomas E. Paradise,** promoted.

H. S. Freeman, chief draftsman on the Great Northern, at St. Paul, Minn., has been appointed office engineer, succeeding **D. J. Kerr,** recently appointed corporate engineer.

J. W. Reid, bridge engineer of the Chicago & Alton, with headquarters at Chicago, has resigned to enter the service of the Robins Conveying Belt Company of Chicago, in an engineering capacity.

W. H. Penfield, engineer of track maintenance of the Chicago, Milwaukee & St. Paul, lines east of the Missouri river, with headquarters at Chicago, has had his jurisdiction extended to include the lines west of Mobridge, S. D.

C. F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroads, with the same headquarters, effective October 1.

A. H. Hogeland, chief engineer of the Great Northern and the Midland Railway of Manitoba, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with the same headquarters, effective October 1.

H. R. Carpenter, chief engineer of the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas,

with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

Charles F. Losh, assistant engineer on the Norfolk & Western, at Portsmouth, Ohio, has been appointed valuation engineer, with office at Roanoke, Va., vice **Chas. S. Churchill,** chief of valuation, who has resigned to accept service with the Norfolk & Western Railway Company.

H. Rettinghouse, chief engineer of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the St. Paul Union Depot, succeeding **W. C. Armstrong.** His authority has also been extended over the Minneapolis Eastern and the Minnesota Transfer, with the same headquarters, effective October 1.

G. H. Ballantyne, assistant engineer of the Western Pacific, with office at San Jose, Cal., has been appointed division engineer of the Eastern division of the Western Pacific, also with jurisdiction over the Deep Creek Railroad, with headquarters at Elko, Nev., and **T. L. Phillips,** assistant engineer of the Western Pacific, at Oakland, Cal., has been appointed division engineer of the Western division, with headquarters at Sacramento.

Purchasing

J. L. Bennett, purchasing agent of the Central of Georgia, has been appointed purchasing agent also of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, with headquarters at Savannah, Ga.

W. A. Linn, purchasing agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroad, with the same headquarters, effective October 1.

I. Seddon, purchasing agent of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been appointed also purchasing agent of the St. Paul Union Depot, the Minneapolis Eastern and the Minnesota Transfer, with the same headquarters.

Charles A. How, purchasing agent of the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

W. L. Ector, division storekeeper of the Central of Georgia, with office at Cedartown, Ga., has been appointed division storekeeper at Columbus, vice **R. L. Geeslin,** resigned, and **G. P. Ward** has been appointed division storekeeper at Cedartown, vice Mr. Ector.

J. H. Clemmitt has been appointed purchasing agent of the Norfolk & Western, with office at Roanoke, Va., vice **E. T. Burnett,** who is now chairman of the Regional Purchasing Committee for the Pocohontas Region. The position of assistant purchasing agent has been abolished.

F. A. Bushnell, purchasing agent of the Great Northern, with headquarters at St. Paul, Minn., and also a member of the Northwestern regional purchasing committee, has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with headquarters at St. Paul, effective October 1.

Corporate

Executive, Financial, Legal and Accounting

A. R. Baldwin, vice-president and general attorney of the Western Pacific, with headquarters at San Francisco, Cal., has been elected vice-president and general counsel of that company and the Tidewater Southern.

A. R. Barton, assistant auditor of the Belt Railroad of Chicago, has been elected treasurer and assistant secretary of the Chicago & Western Indiana Railroad Company and the Belt Railway Company of Chicago, with headquarters at Chicago.

Arthur B. Nichols, on the staff of the president of the Boston & Maine, has been appointed treasurer of the Boston & Maine, for the corporation, and **William S. Trowbridge,** auditor of the Boston & Albany, has been appointed controller of the Boston & Maine, for the corporation, both with offices at Boston, Mass.

C. M. Levey, president of the Western Pacific, with headquarters at San Francisco, Cal., has also been elected president of the Tidewater Southern, succeeding **B. A. Bearce,** who was elected vice-president of that company. Mr. Levey was also elected president of the Deep Creek, succeeding **Duncan Mac Vichie,** who has been elected vice-president.

William Church Osborn, chairman of the Texas & Pacific, with headquarters at New York, has been elected president of the corporation, to succeed **J. L. Lancaster,** who has resigned as president and director, to become federal manager of the road under the Railroad Administration. **C. L. Wallace,** assistant to the receiver, has been elected vice-president of the corporation, with headquarters at New Orleans, La.

The corporate organization of the Norfolk & Western Railway Company is now as follows: **L. E. Johnson,** president, Roanoke, Va.; **William G. Macdowell,** vice-president, Philadelphia, Pa.; **Charles S. Churchill,** vice-president, Roanoke; **Jos. I. Doran,** general counsel, Philadelphia; **E. H. Alden,** secretary and assistant treasurer, Philadelphia; **J. S. Wynn,** comptroller, Roanoke; **J. S. Clarke,** treasurer, Roanoke, and **I. W. Booth,** assistant secretary, Philadelphia.

Robert Crosbie, assistant to the controller of the Spokane & Inland Empire and the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been elected secretary, and Paul McKay has been elected treasurer of these companies and the Oregon Trunk, the Pacific & Eastern, the Oregon Electric and the United Railways, with the same headquarters. They succeed **F. A. Smith,** who resigned to become federal treasurer of the Spokane, Portland & Seattle.

Clarence S. Sikes, general auditor of the Pere Marquette, with office at Detroit, Mich., has been elected vice-president, with headquarters at Detroit. **E. M. Heberd,** assistant secretary at New York, has been elected secretary, and **W. E. Martin,** assistant treasurer at New York, has been elected treasurer; both with headquarters at New York. **H. G. Myers** has been elected assistant secretary and assistant treasurer, with headquarters at Detroit.

Frank S. Elliott, president of the Spokane & Inland Empire and the United Railways, with headquarters at Portland, Ore., has also been elected vice-president of the Oregon Trunk, the Pacific & Eastern, and the Oregon Electric, succeeding **W. F. Turner,** who is now president of these companies. Mr. Elliott has also been elected vice-president of the Spokane, Portland & Seattle, succeeding **George T. Reid,** who resigned to become assistant to the federal manager of the Northern Pacific.

C. F. Craig, secretary of the Western Pacific and the Tidewater Southern, has been elected secretary and assistant treasurer of the former company, secretary and treasurer of the Tidewater Southern, and treasurer of the Deep Creek, with headquarters at San Francisco, Cal. **D. C. De Graff** has been appointed auditor of the Western Pacific, the Tidewater Southern and the Deep Creek. **R. P. Dunbar,** who was secretary and auditor of the Deep Creek, remains secretary of that company, with headquarters at Salt Lake City, Utah.

Operating

H. B. Stevens, assistant engineer of the Canadian Pacific, at Sudbury, Ont., has been appointed assistant superintendent, with office at Havelock, in place of **R. G. Edwards,** transferred.

J. B. Blair, assistant superintendent of the Canadian Pacific, with office at Farnham, Que., has been appointed superintendent of the Montreal Terminals division, and **M. W. Bard,** assistant superintendent, with office at Farnham, has been appointed acting superintendent of the Farnham division, in place of Mr. Blair.

Engineering and Rolling Stock

J. R. Caswell has been appointed division engineer of the Canadian Pacific, with office at London, Ont., to succeed **J. M. Silliman,** resigned to go to another company.

I. N. Clark has been appointed master car builder on the Ontario lines of the Grand Trunk, with headquarters at London, Ont., vice **T. A. Treleaven,** retired; **J. Brooks** has been appointed assistant master car builder at the London shops, and **W. A. Pitt** has been appointed assistant master car builder at the Montreal shops.

Richard Montford, who has been appointed chief engineer of the Louisville & Nashville for the corporation, with headquarters at Louisville, Ky., was born on March 4, 1854, in Ireland. He was educated at the Royal College of Science for Ireland and graduated as a civil engineer in 1876. He began railway work on July 1, 1880, with the Louisville & Nashville, and for three years served as bridge engineer. From 1883 to 1887, he was resident engineer in charge of roadway, bridges and buildings, and then was chief engineer until 1905, when he became consulting engineer of the same road, which position he held until his recent appointment as chief engineer for the corporation, as above noted.

Horace C. Booz has received his honorable release from the United States Army, in which he held a commission as Colonel, and has entered upon his duties as corporate engineer of the Pennsylvania Railroad. Prior to the taking over of the railroads under government control, Mr. Booz was assistant chief engineer of the Pennsylvania Railroad. After Vice-President W. W. Atterbury went to France in the summer of 1917, as director general of transportation of the American Expeditionary Forces, he asked that Mr. Booz be sent over to become one of the principal members of his staff. The directors of the railroad company on September 26, 1917, granted indefinite leave of absence to Mr. Booz for this purpose. He joined General Atterbury early in October, 1917, when he was appointed engineer of construction in charge of building port and railroad facilities. Mr. Booz was at first commissioned a major and was later advanced to colonel. The directors of the company have now requested the discharge of Col. Booz, with regret, because of his intimate acquaintance with the engineering affairs of the road, Chief Engineer A. C. Shand and Assistant Chief Engineer E. B. Temple having been taken over by the United States Railroad Administration. Mr. Booz was born at Bristol, Pa., in 1875, and received the degree of civil engineer at Lafayette College in 1895. He entered the service of the Pennsylvania Railroad in the following year, as a transitman, and in November, 1899, was promoted to division engineer. He became assistant engineer in 1901. He was appointed principal assistant engineer of branch lines in May, 1905, remaining in that position until January, 1911, when he was appointed assistant chief engineer of the company.

Colonel H. C. Booz

William Joseph Bergen, first assistant to the chief engineer of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed chief engineer of the corporation with the same headquarters. Mr. Bergen was born at Waterbury, Conn., on February 16, 1872, and graduated from Rensselaer Polytechnic Institute at Troy, N. Y., in June, 1897. In May, 1899, he entered railway service as assistant to the division engineer on construction of the Burlington & Missouri River, now a part of the Chicago, Burlington & Quincy; from July, 1899 to January, 1900, he was levelman and instrument man on location with the same road; and from January, 1900, to July, 1901, he was division engineer on construction. In the ensuing five and one-half years he was assistant engineer on the New York, Chicago & St. Louis and from January, 1907, to August of the same year, he was chief supervisor of track. On the latter date he was promoted to first assistant to the chief engineer which position he held until his recent appointment as chief engineer of the corporation, as mentioned above.

Railway Officers in Military Service

Charles B. Falley, formerly general superintendent of the Evansville & Indianapolis, at Terre Haute, Ind., is now in France as major of the 69th Engineers. **R. E. Farmer,** formerly assistant superintendent of the same road at Terre Haute, is a lieutenant in the same regiment.

Obituary

James T. Avery, assistant secretary and treasurer of the Norfolk Southern, for the corporation, with headquarters at Norfolk, Va., died at Virginia Beach, Va., on October 2.

Robert Arthur Billingham, for the last two years mechanical superintendent of the Tennessee Central, with office at Nashville, Tenn., died on September 29, at Schenectady, N. Y., after a long illness.

William A. Moncure, real estate agent of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., was injured while alighting from a train at Fredericksburg, Va., on October 2, receiving injuries which caused his death on the following day. Mr. Moncure was 48 years old.

Charles Gustavus Roebling, president of the John A. Roebling's Sons Company, of Trenton, N. J., who with his brother, Washington Augustus Roebling, completed the construction of the Brooklyn Bridge, which was started by their father, John A. Roebling, died October 6 from Bright's disease at his home in Trenton, N. J. He was 69 years old and was born in Trenton. Mr. Roebling was president of the John A. Roebling's Sons Company, of Trenton and Roebling, N. J., and of the New Jersey Wire Cloth Company, of Trenton, and vice-president of the John A. Roebling's Sons Company, of New York. He graduated from the Rensselaer Polytechnic Institute with the degree of civil engineer in 1871, and for a number of years was mechanical engineer of John A. Roebling's Sons Company. The achievements of the company are due in no small measure to his work. He was engineer and builder of the Oil City Suspension Bridge at Oil City, Pa.; in 1881 he was engineer and contractor of machinery for the removal of the Cleopatra Needle from Alexandria, Egypt, to Central Park, New York, and in 1902 he made cables for the Williamsburg Suspension Bridge in New York. He assisted his brother, Washington A. Roebling, in the construction of the Brooklyn Bridge. Their father, who had undertaken the work, died in 1869, before the actual construction was begun. Mr. Roebling was a member of the Legislature of New Jersey in 1903 and presidential elector for New Jersey in 1904. He was a member of the Iron & Steel Institute of Great Britain and the American Iron & Steel Institute, and of the Institute of Mining Engineers.

OUR INDIVIDUAL PART.—Every American at home should feel an individual responsibility and do his or her individual part in winning the war. There is not an American citizen who cannot help win the war. The Fourth Liberty Loan drive, which is now on, offers a great opportunity for concerted action and for individual action, and the loan will be a tremendous success if each American will do his or her indivdual part as each American soldier in France does his part. Our soldiers deserve such support from the people at home.